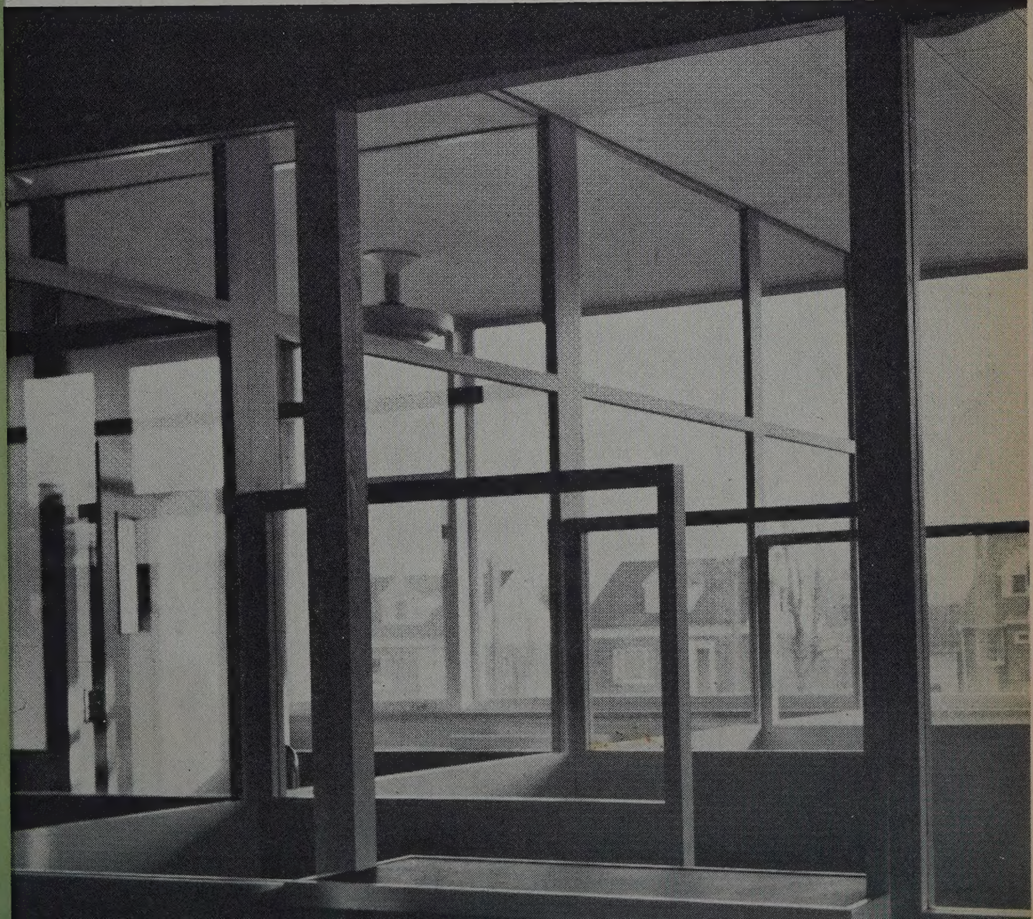
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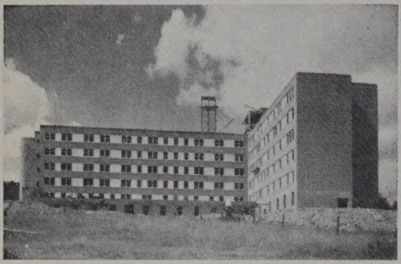
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SOME OF THE HOSPITALS HEATED BY

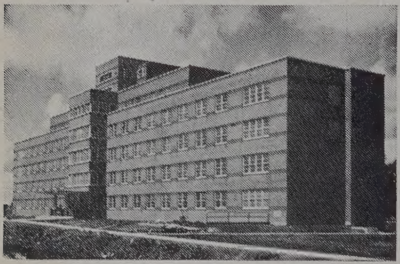
TRANE CONVECTOR-RADIATORS



SUDBURY GENERAL HOSPITAL
Architect—Louis N. Fabbro, B. Arch.



GUELPH GENERAL HOSPITAL
Architects—Marani & Morris



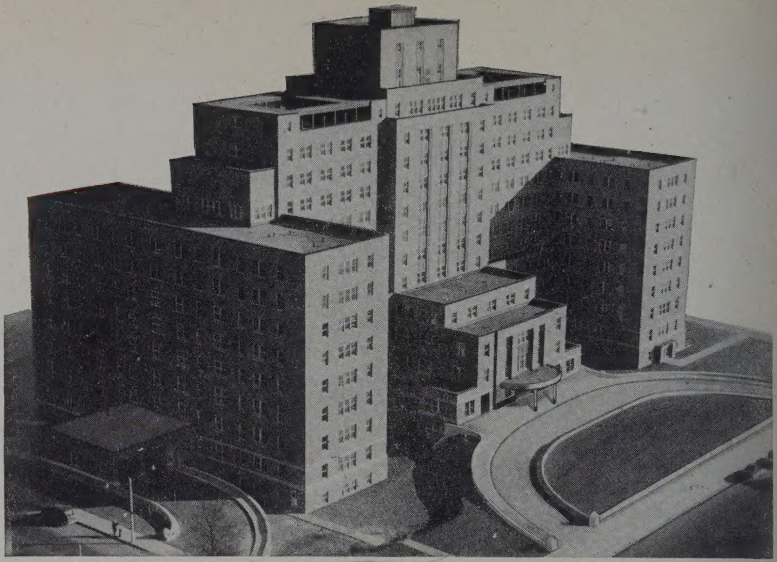
STRATFORD GENERAL HOSPITAL
Architects—Marani & Morris



ST. PAUL'S NURSES' HOME, VANCOUVER, B.C.
Architects—Gardiner & Mercer



NOTRE DAME HOSPITAL, MONTREAL, P.Q.
Architects—Stevens & Lee



Architects—Messrs. Govan, Ferguson, Lindsay, Kaminker, Maw, Langley, Keenleyside.

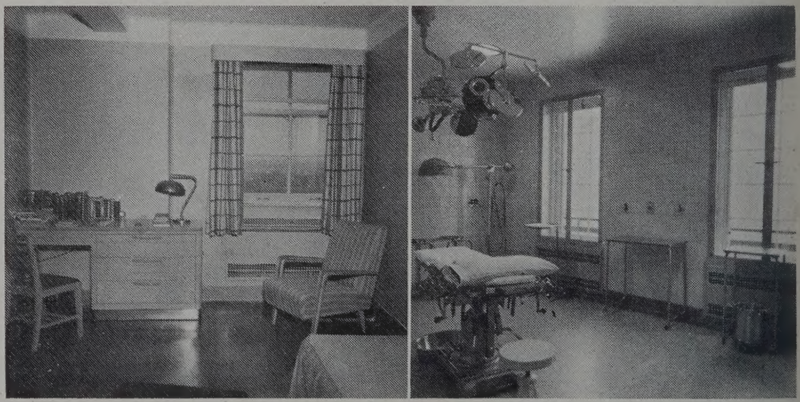
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A LESSON TO EVERYONE

The New Hospital for Sick Children, recently opened, is the world's major research and treatment centre for children's diseases. In the magnificent new building in Toronto, a record of unsurpassed service to mankind continues with greater vigor made possible by the adequate space and vastly improved facilities now provided. Out-patient attendance, already the largest of any hospital in the world, along with vastly increased in-patient accommodation and extensive laboratories for research in cancer, tuberculosis, diabetes and other diseases make possible a contribution to medicine of world significance.

Throughout this great building Trane Convector-radiators supply the gentle, steady heat required to bring comfort to thousands of patients, nurses and staff. The selection of Trane Convector-radiators for this important purpose is a source of pride to Trane Company of Canada Limited. This is one more installation which indicates that Trane Convector-radiators are "The Sign of Good Heating —*Everywhere!*"

TRANE CONVECTOR-RADIATOR INSTALLATIONS



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Architects—Allward & Gouinlock

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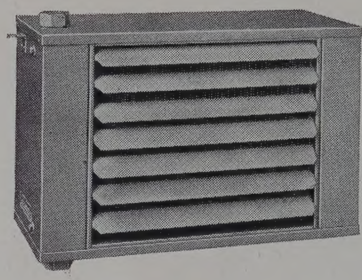
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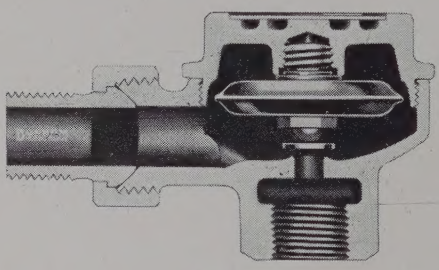
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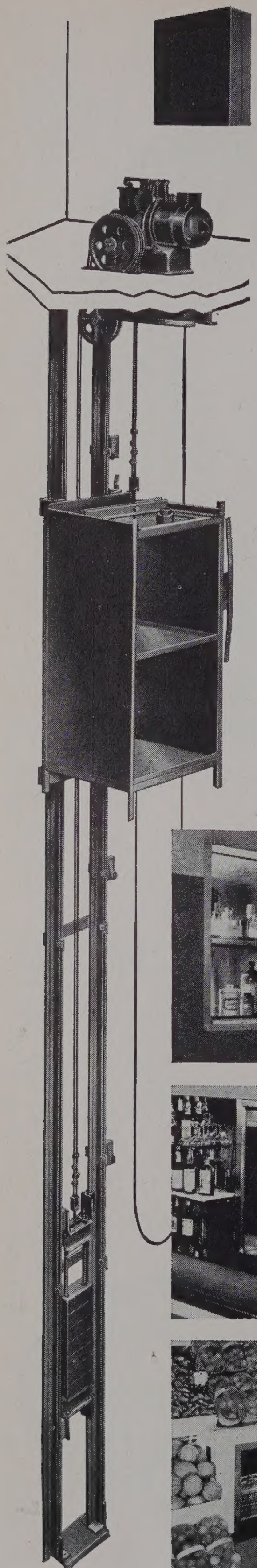
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Automatic service for any number of floors. Speeds and capacities for all requirements. Standard automatic 'call-and-send' push button operation, or special operation as required. Available for single or multiple installations. Quiet operation on steel rails with sound-deadened cars. Safe from every standpoint. Bi-parting hoistway doors cannot be opened unless car is at landing. Car can't move when doors are open. Limit switches prevent car over-travel at top and bottom of shaft. Elevator-type traction hoisting machine has electro-mechanical brake, ball and roller bearings, bronze worm-gear, Otis-built A.C. Motor—*as described in Bulletin BC-453.*



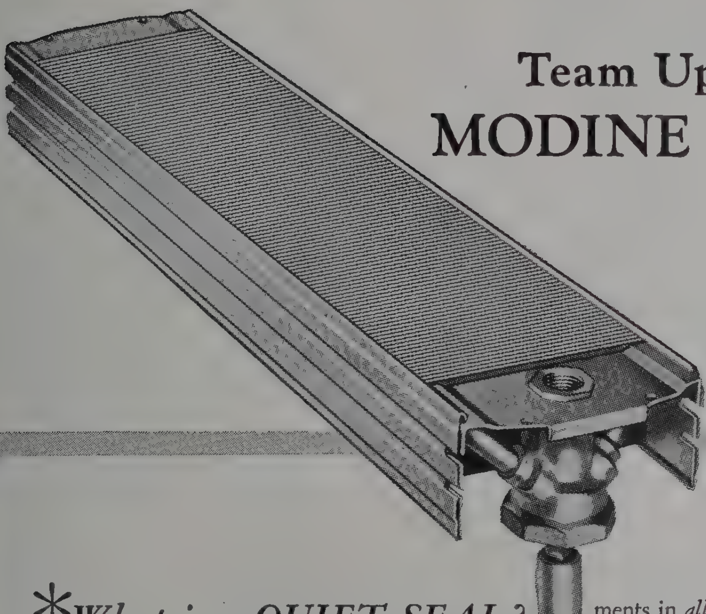
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For use in stores to keep aisles free of cartons and crates; to keep fast-moving stocks replenished. In banks, to carry cash to and from vaults or checks and ledgers to bookkeeping staffs. The OTIS-built cars are especially designed to stop at floor level and fit under a counter at the upper landing. Elevator-type hoisting machine is located at the bottom of hoistway. Same 'call-and-send' operation, safety-features, quiet operation as OTIS General-Service Dumbwaiters. The compact automatic controller can be mounted in any convenient location. Steel guide rails can be attached to load-bearing walls or made self-supporting—*as described in Bulletin BC-380.*

21 OTIS offices across Canada are interested in helping you plan dumbwaiter installations—for stores, shops, restaurants, bars, hotels, clubs, hospitals, laboratories, banks, schools, ships. Otis Elevator Company Limited. Head Offices and Works: Hamilton, Ontario.



ELECTRIC DUMBWAITERS

If you're planning to use ONE-PIPE STEAM to cut installation and maintenance costs . . .



Team Up With MODINE QUIET-SEALS*

*What is a QUIET-SEAL?

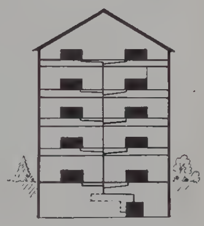
"Quiet-Seal" is the trademarked name of a Modine Convector *designed specifically for use on 1-pipe steam systems.* Patented heating unit (above) provides fast, smooth, quiet performance at full-rated capacity. Because steam, condensate (and air, when present) all flow in one and the same direction, the basic causes of water-hammer, gurgling and spitting of air-vents are eliminated. Free and easy venting prevents air binding or water-logging . . . a cause of slow response and reduced capacity.

Many thousands of Modine Quiet-Seals now in service, prove conclusively the possibility of providing excellent 2-pipe convector performance on 1-pipe steam systems.

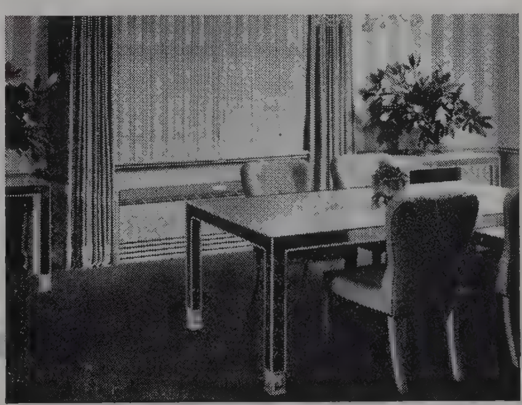
Quiet-Seals Improve 1-Pipe Steam Performance — By permitting superior temperature control and system balance, Quiet-Seal Convectors greatly improve 1-pipe steam performance.

Having approximately 1/17th of the metal mass and 1/20th the internal volume of an average cast iron radiator, Quiet-Seals heat up many times faster . . . and as a result . . . almost simultaneously.

With Quiet-Seals, a 1-pipe steam system can be brought up to temperature much more rapidly than with ordinary radiators. Temperature requirements in *all parts* of a building are quickly satisfied. Consequently—unbalanced performance, caused by excessively long heating-up periods, is avoided . . . and the difficulty of providing satisfactory temperature control is eliminated.



Damper Modulated Heat Delivery for Comfort and Economy — Personalized room temperature control by manual adjustment of convector dampers eliminates expense of valves . . . discourages wasteful over-heating. When valves are used on 1-pipe steam radiators, they must be of the "on-and-off" type which do not permit modulation of heat delivery. *Only convectors offer this important refinement in 1-pipe steam heating.*



R-1102



Free Bulletin Available — *For additional information on Modine Quiet-Seal Convectors and 1-pipe steam heating, get new Bulletin 250-B. Call your Canadian representative. Or write direct to Modine Mfg. Co., Racine, Wisconsin.*

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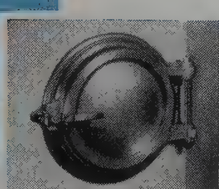
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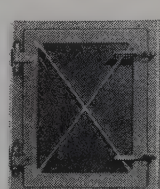


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AND YOU MAKE SURE OF THE BEST AND QUICKEST JOB — with the least trouble — when, with B.P. Flortile, you get the experienced services of your B.P. Approved Flooring Contractor. You can always count on him for helpful, on-the-spot advice, and for quick, competent Flortile application — over either wood or concrete sub-floors.

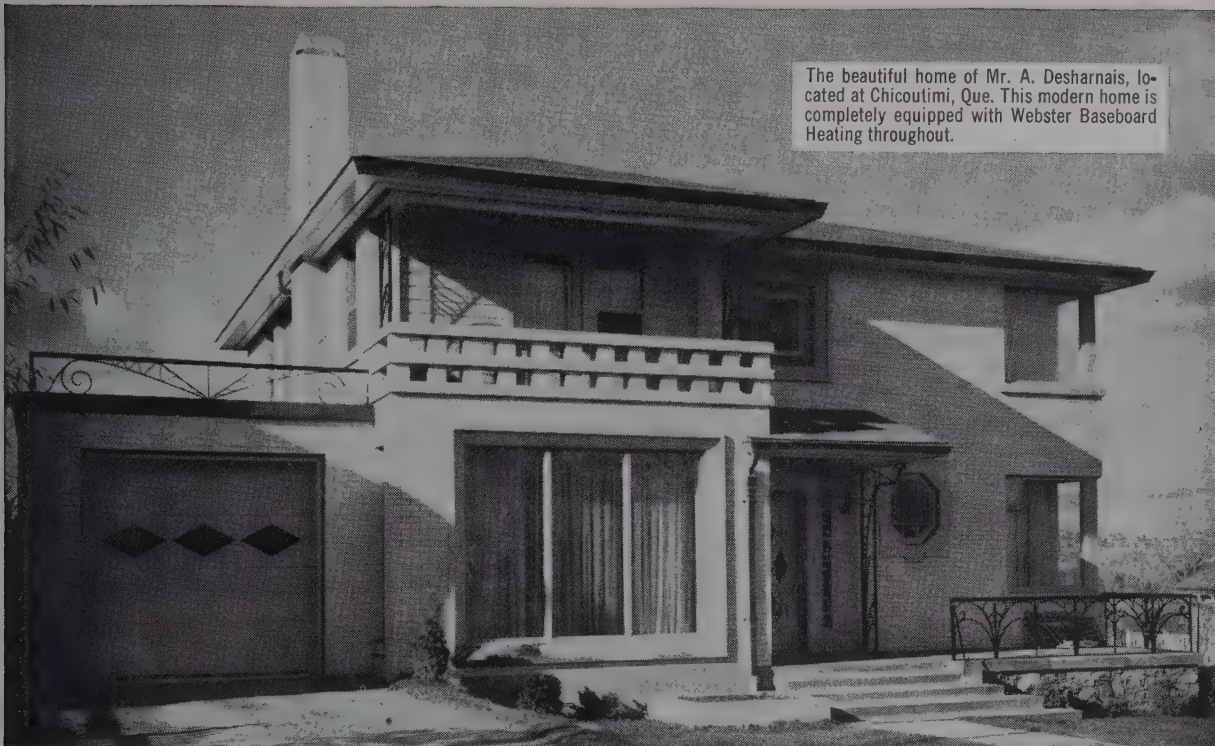
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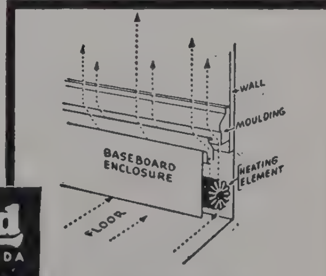
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For complete technical details, Architects and Contractors are advised to write for Bulletin SCE, Webster Baseboard Heating.

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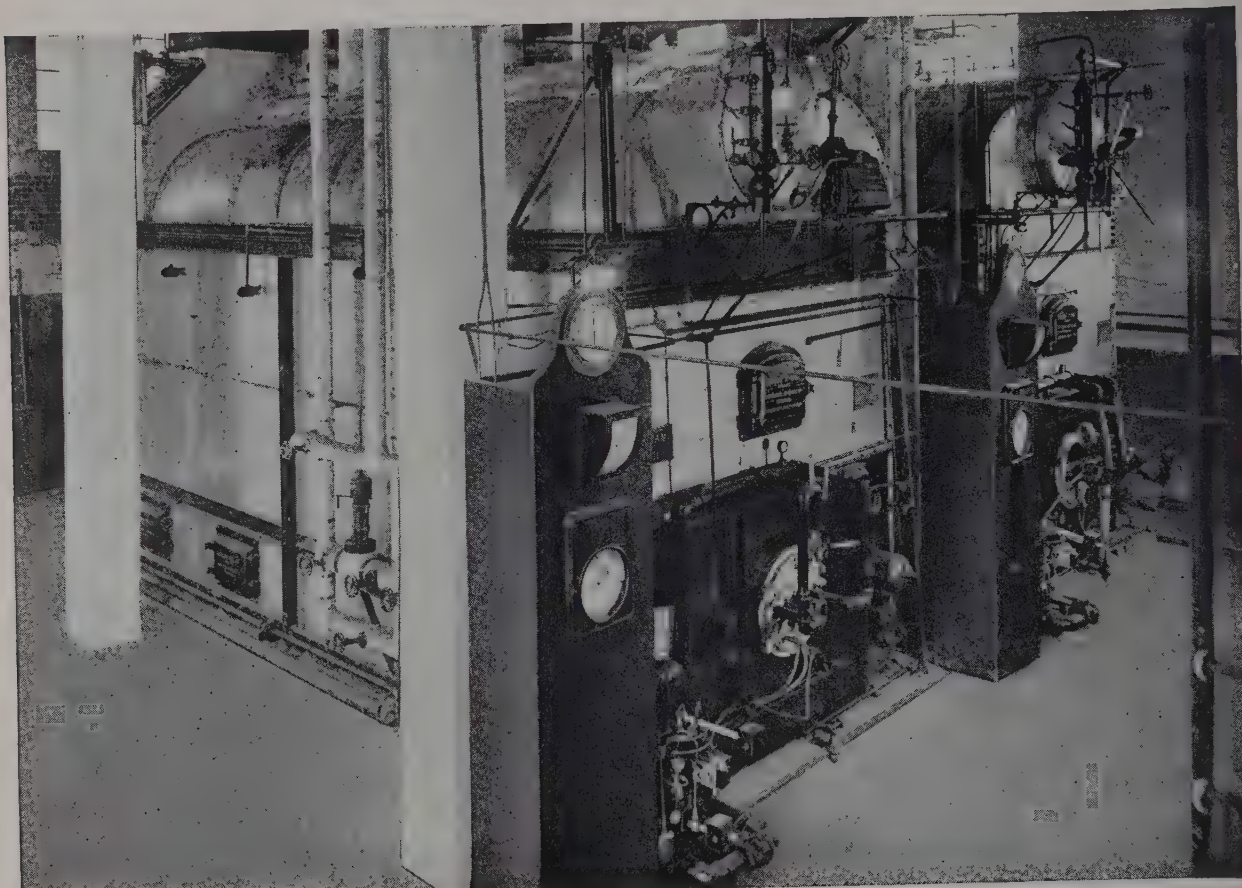
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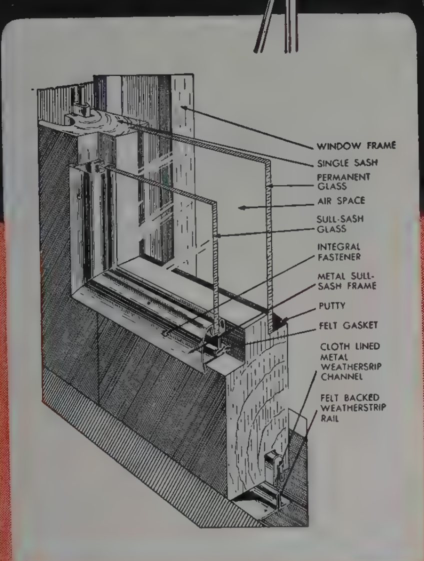
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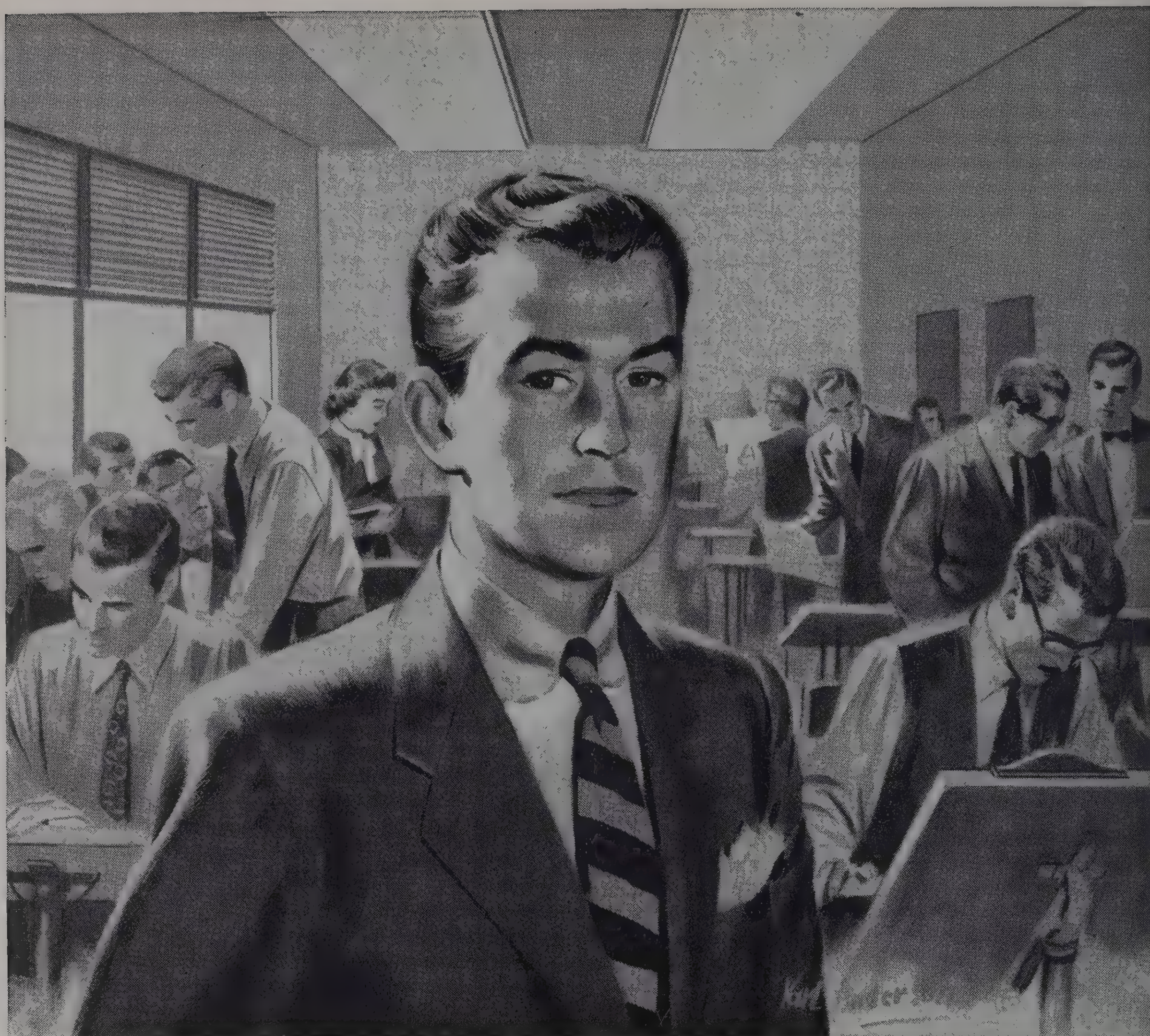
Cresswell Pomeroy build "window-soundness" throughout a structure by designing the complete window installation in close accord with the architect and building contractor.

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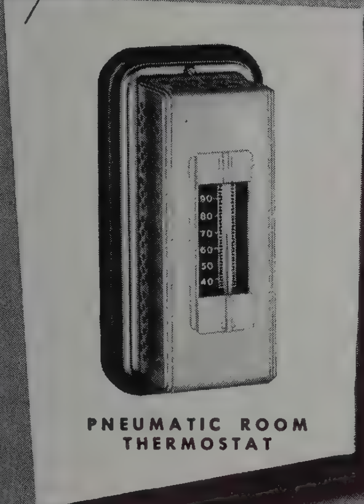
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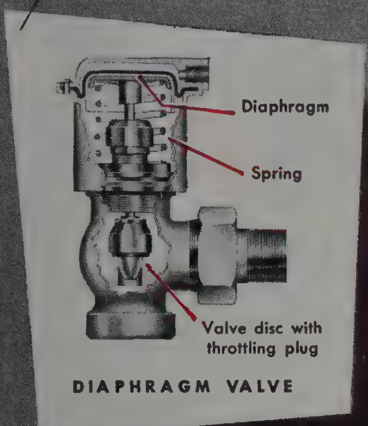
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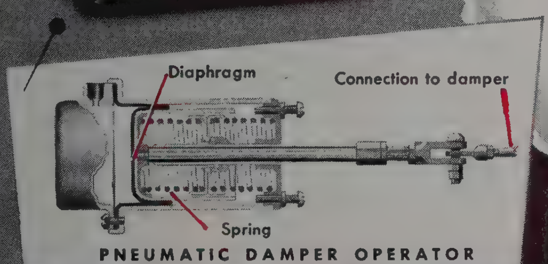


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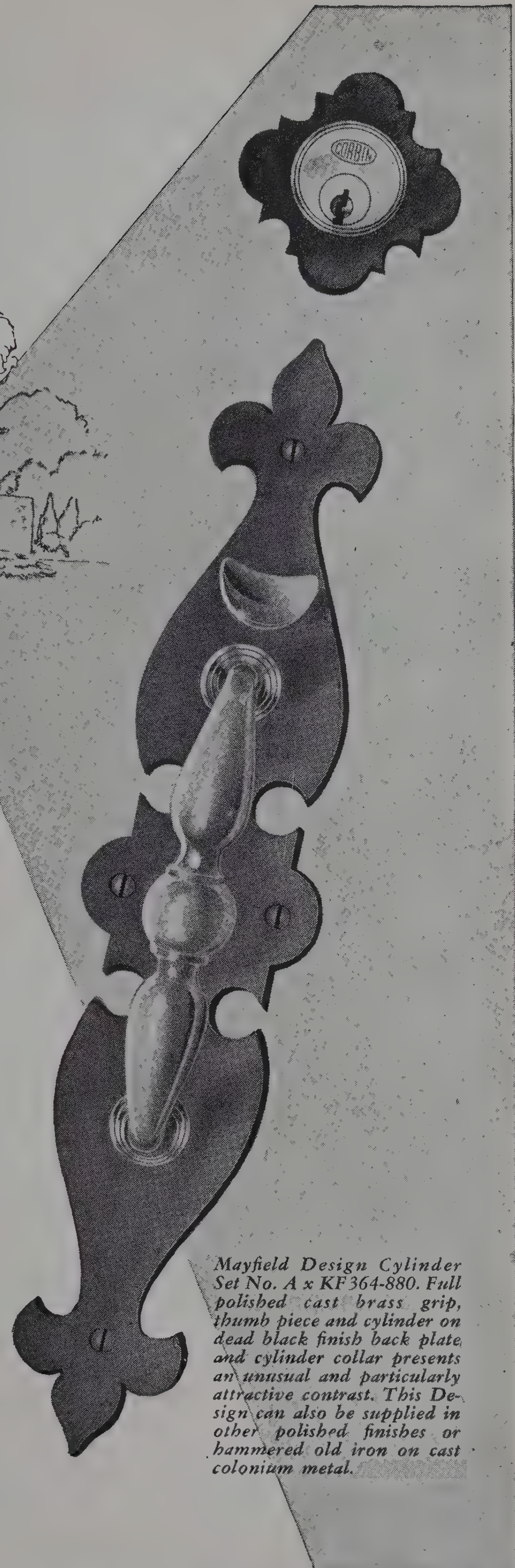
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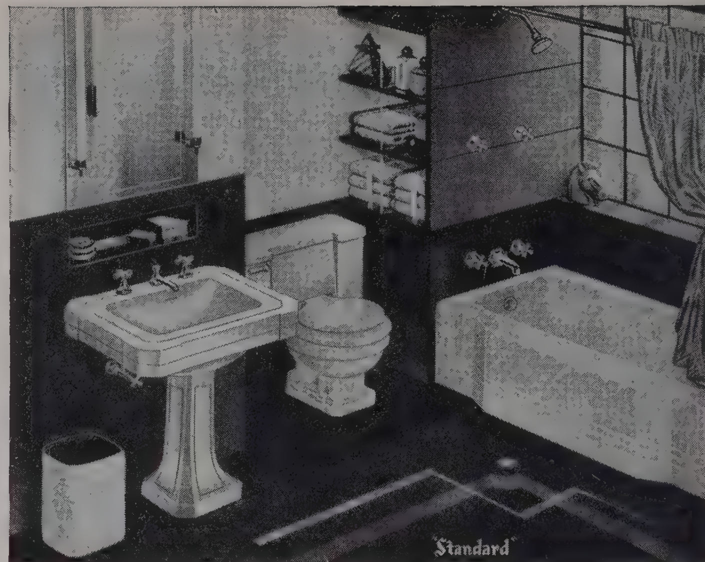
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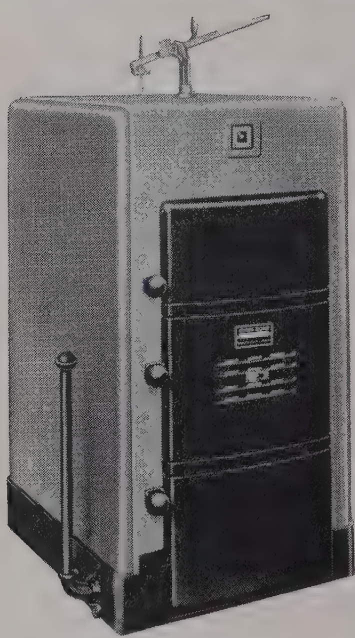
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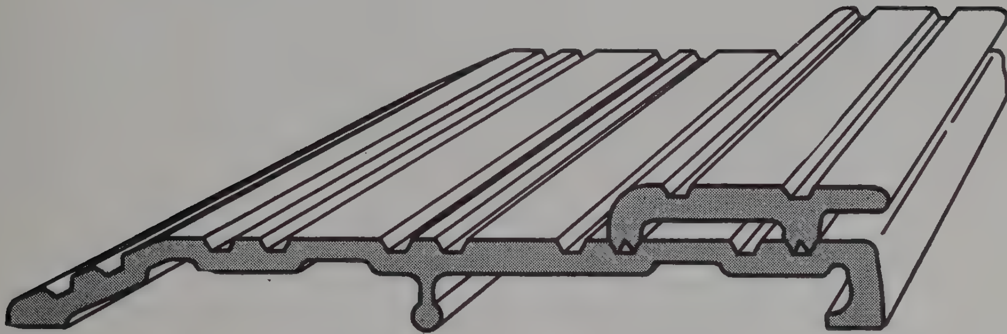
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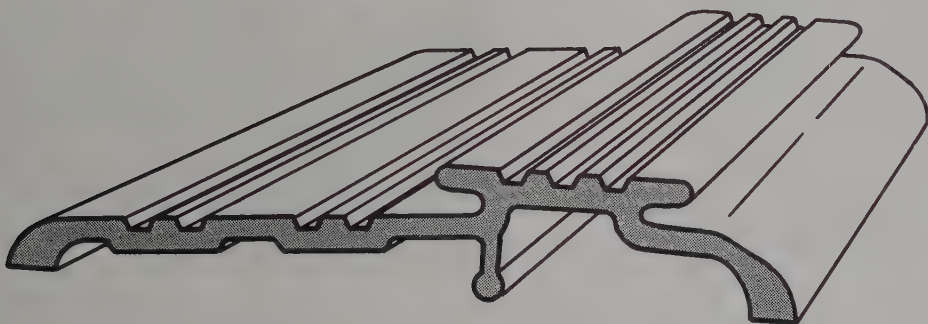
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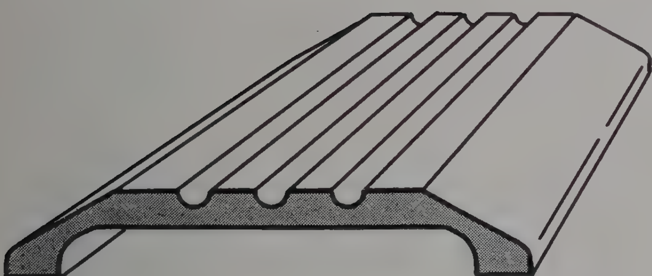


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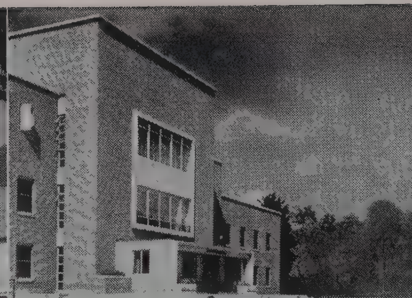
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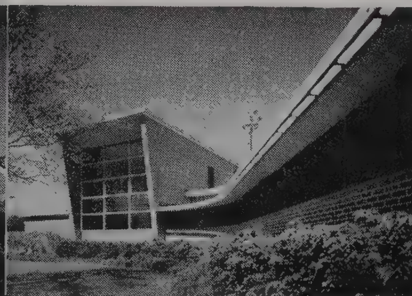
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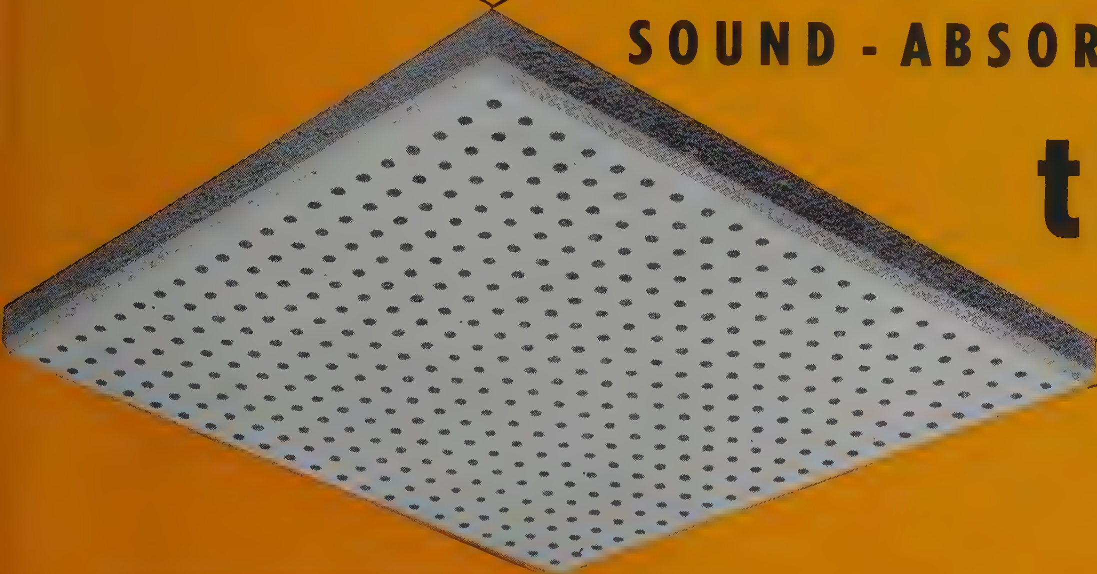
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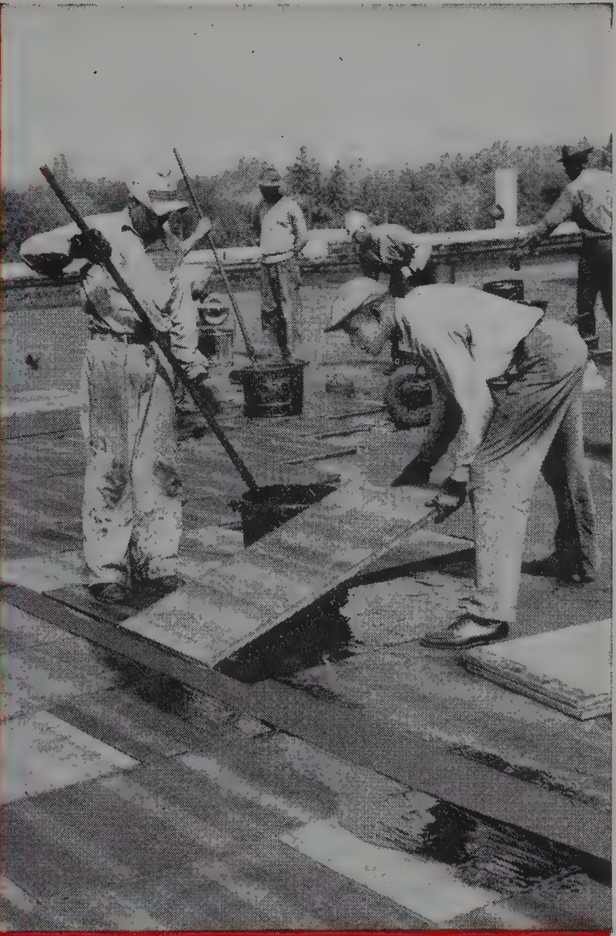


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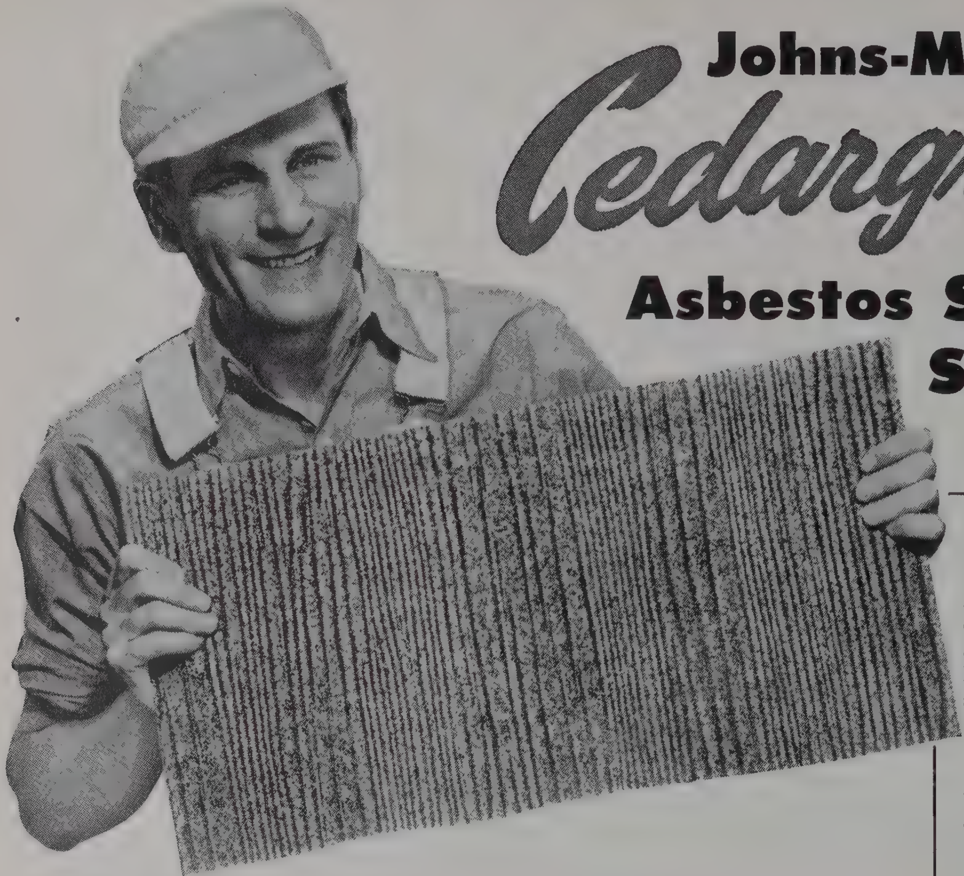
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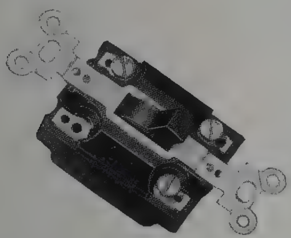
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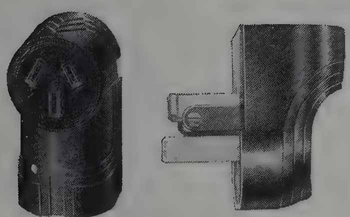
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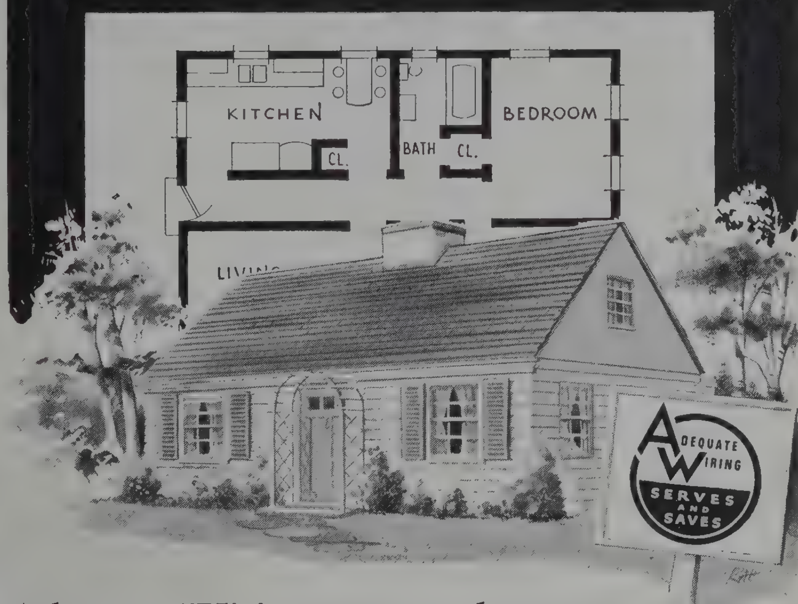
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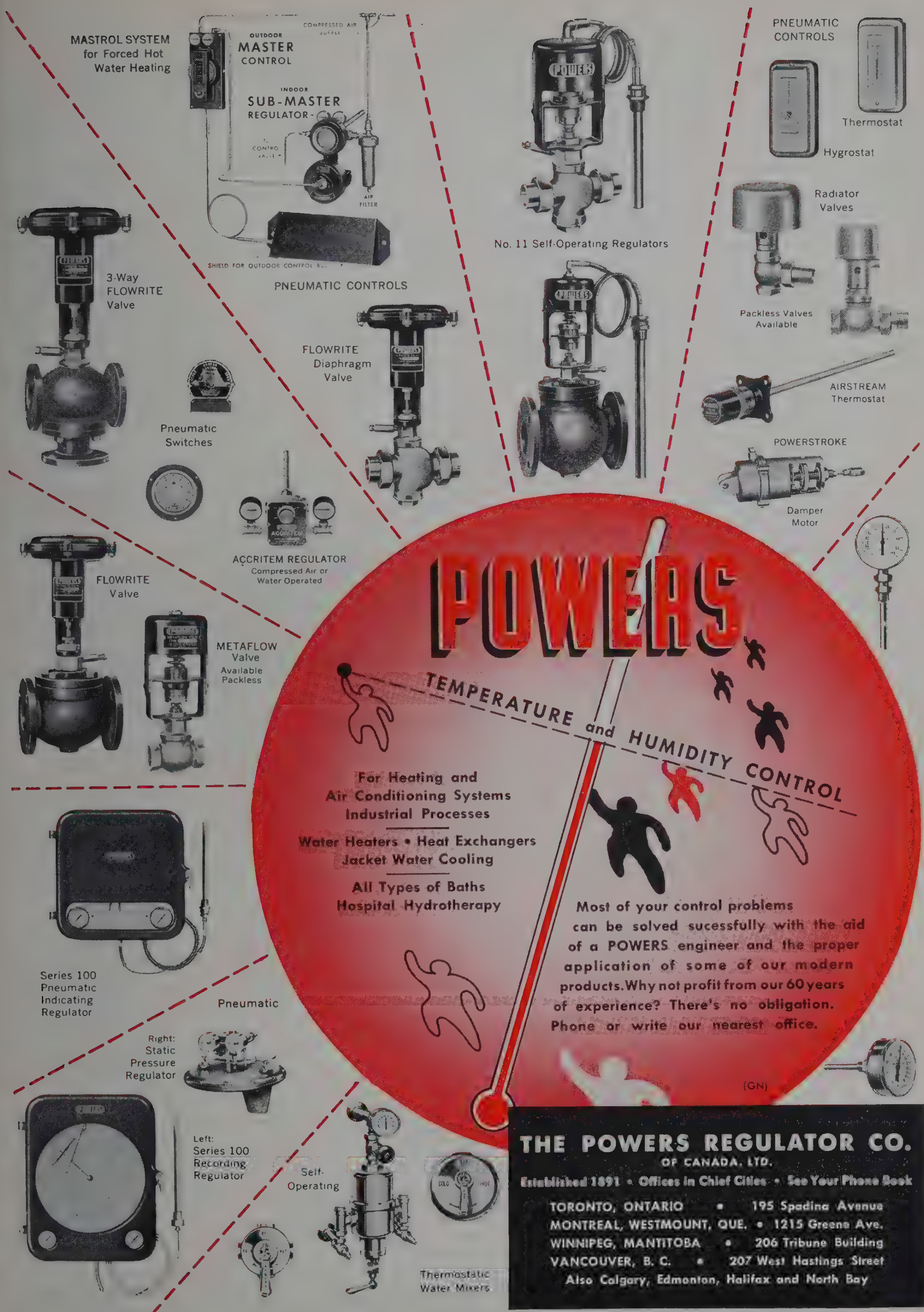
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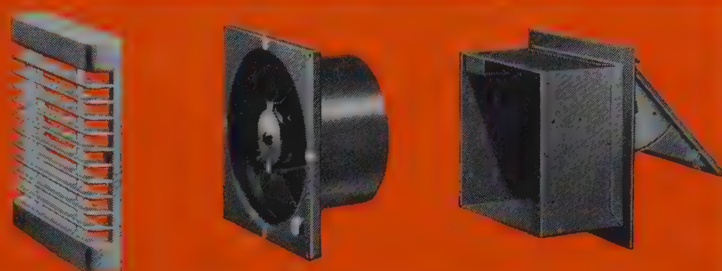


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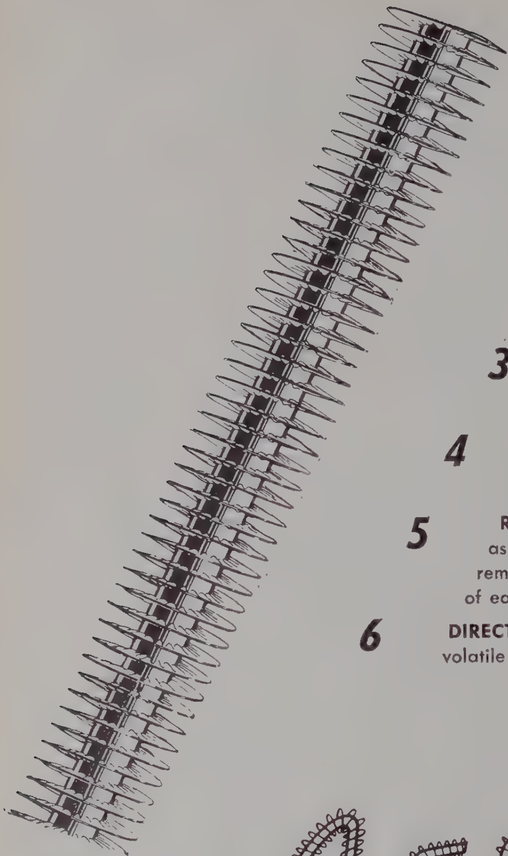


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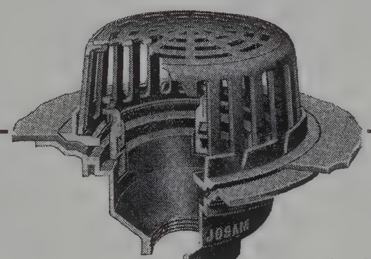
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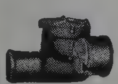


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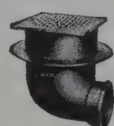
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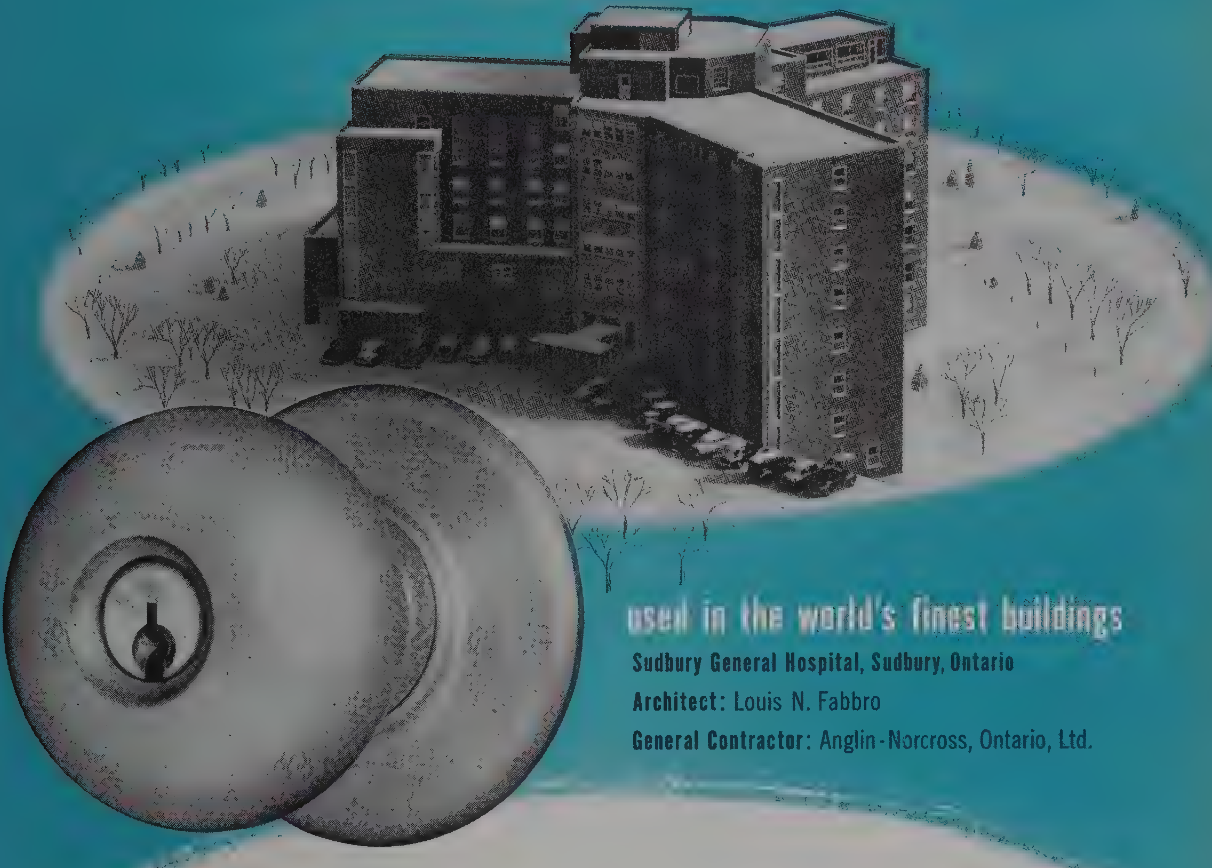
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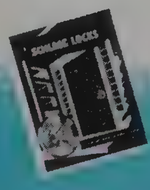
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Journal

Serial No 308, Vol. 28 No 4

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

EDITORIAL AND ADVERTISING OFFICES, 57 QUEEN STREET WEST, TORONTO 1

Secretary to Editorial Board, Mrs Vera Williams

Toronto April 1951

EDITORIAL

Of all the buildings known to our grandparents, none has changed so radically as the general hospital. Technological progress, particularly in the electrical field, has wrought great changes in many buildings including the modern house, but, in the hospital, technological advances have combined with medical science to produce a building unrecognizable to even this generation. The multi-storey hospital becomes, whenever possible, a one or two storey building; the monumental proportions of the hospital dedicated to civic pride has given way to one of human scale; wards have become smaller; ceilings lower, and drabness inherited from the workhouse has given way to colour and hope.

What would the mechanical trades cost in Lister's, or even Osler's time? Today they are 30 per cent. of the cost of the building, and such a percentage includes only fixed equipment. Against such a figure, the architect is powerless to reduce costs substantially. He and his Hospital Board look, naturally, at outside brick walls as though they represented the difference between an expensive and an economical building. He may change to concrete block, or he may change to cardboard. In a fit of rage, he may omit the outside walls altogether, and he will save only 3.7 per cent. of the total cost. The combination of rising prices and improved technical services are an unholy alliance against which the architect will find it hard to effect economies. Sound planning, the closest scrutiny of material and methods of construction, along with such obvious savings as the 8 foot, 6 inch ceiling height (unless prevented by obsolete codes) are the architect's only opportunities for reducing costs.

We wonder whether hospital construction will ever catch up with need—whether a Minister will ever be able to sit back and say "we have 20 per cent. vacancies in the hospitals of this city or province." The growth of organizations like the Blue Cross Plan for Hospital Care, the Welfare State, and Workmen's Compensation Board all tend to keep the number of needed beds vastly in advance of actual accommodation. The only hope, and it is a long way off, would seem to be that medical service will make such strides as to make hospitalization necessary for a smaller and smaller section of the population. We have heard it said that no more tubercular sanatoriums of any size will be built in Canada, and that some will close in less than a decade. Only last week, when we were in New York, we read that the city's largest V.D. clinic had just been closed. Is it possible that we are approaching Samuel Butler's Erewhon where the greatest crime was that of being ill?

In the meantime, 30 per cent. of the beds in our general hospitals (at any rate in Ontario) are occupied by the chronically ill. That is to say that in the 1,000 bed hospital, 333 persons are, in a year, occupying beds that would be used by nearly 12,000 persons on a ten day average stay in hospital. Over Canada, the figures become astronomical. If the chronic hospital were cheaper to build than the general hospital, the answer would be simple, but unfortunately it is not. Only the convalescent hospital, which would lack the operating rooms of the general hospital, or the rooms for therapies of all kinds in the good chronic hospital, seems to offer any possibility for economical building. It always surprises us that more are not built, because the number of beds made available in acute general hospitals would be considerable.

In Ontario, we are conducting a campaign among architects and laymen to discourage the use of the term "cost per bed," and to encourage the much more rational "cost per cubic foot." No one speaks any more of classroom costs in a school, and a moment's thought will demonstrate the foolishness of the bed as a unit of cost. One might as well use it to indicate the cost of a house. The campaign is meeting with much success.

H. G. HUGHES

PROGRESS IN HOSPITAL PLANNING

The history of the art of healing disease is one of conservatism, for changes in this field have come slowly. It has been the gradual growth of knowledge and understanding intermingled with superstition and magic.

We have knowledge that the Egyptians 4,000 to 5,000 years ago practised medicine; true, it was all mixed up with their religion, superstition and certain practical measures. For example, they performed crude operations, such as splinting broken bones, but they also believed that by eating certain internal organs of a fox, one would absorb his cunning or a similar procedure with a lion would give one courage.

However, they had many drugs including opium. They would serve up a broth of boiled toads for those suffering from heart disease. We now know that the skin of a toad contains a certain amount of Digitalis, which I am informed is a beneficial drug for heart sufferers.

It is known that the Minoan Civilization of Crete, as far back as 4,000 B.C., had institutions of refuge where they sought to heal disease by medicine. In India the old Hindu law books mention that each village must have a hospital, which they state should have adequate ventilation, with no dust, no odours, and should be quiet. They state that the operating room should be clean and bright and the surgeon should be silent and quick. It is interesting that these surgeons had as many as 125 different instruments with which to practise their skills, while Pare of France, one of the greatest surgeons of all time, who lived in the sixteenth century, had only 5 different instruments to assist him in his work.

Before the Christian era, hospitals were mostly the temples of the Gods of Medicine.

It was only natural that Christianity, with our teaching of love and care for our fellow man, should take unto itself the care of the sick. It was only natural, too, that the early Christians leaned more towards nursing care and religion than towards Science and Medicine.

The oldest hospital that is still in operation is the Hotel Dieu in Paris, which was opened in 660 A.D. It consisted of four main wards 36 feet wide by 240 feet long. Patients were placed three to six in a bed and it was not uncommon for a patient to be lying next to a corpse for some time before it was discovered.

We have come a long way in hospital care since those far off days, but it is only in fairly recent times that the radical changes have taken place.

The first hospital of the new world was built 425 years ago in Mexico City by Cortez for the use of his soldiers. But the first General Hospital was built here in this historical city. There is no need to tell you of the History of the Hotel Dieu which has been serving the people of Quebec since 1639, or the Hotel Dieu Jeanne Mance which has been giving a similar service to Montreal since 1644.

It was not until the Industrial Revolution of the nineteenth century that real strides were made in the design of hospitals. For it was then that modern inventions in the mechanical field produced such items as steam for heating, elevators, sterilizers and an appreciation of the possibilities of mechanical ventilation. It was natural, therefore, that these developments would be incorporated into our hospitals, allowing the designer more flexibility and freeing him from the fetters that restrained his confreres in the past.

Obviously these changes did not come all at once, nor were they immediately incorporated in all our hospitals. In this regard it is interesting to mention a description of the Montreal General Hospital in the year 1867, which has been given to us by the late Dr F. J. Shepherd.

He stated that hospitals generally at that time were places where people came to die. In this particular hospital, it was not uncommon to find rats in the wards, but little fresh air. He goes on to say that the nursing was very poor and that surgeons operated with septic hands and dirty instruments. It was customary for them to operate in their frock coats, which, he states, were baptized by the blood of their victims.

Hospital Planning

In the early part of this century many of our hospitals were designed to produce a pleasing and often extravagant exterior to the detriment of internal requirements. They appeared to be designed to impress the passerby and to satisfy civic pride, as much as to serve the patient and facilitate the work of the hospital staff.

In this regard definite progress has been made. Today we all realize that the planning of a hospital commences with determining the unit requirements of patient accommodation, and the proper integration of all the various units, that comprise the modern hospital. This conception of planning the building from within and, at the same time, bearing in mind such items as proper orientation, contours of the site, plus possible future expansion, I believe to be one of the greatest contributions for better hospitals today and one wherein we have shown considerable

progress.

With the advent of high speed elevators and also the high cost of property in many of our cities, it was only natural that a vertical plan be considered for some of our larger hospitals.

The advantages of this type of structure are first, that it is a great time saver for staff, who can reach any ward in a matter of seconds (if the elevators are sufficient in number); then there is economy in locating mechanical equipment such as plumbing, heating, and ventilating, vertically, rather than horizontally; there is a reduction in the amount of land required and perhaps view and air are more pleasant when one gets well above city streets.

On the other hand, in a building with multiple floors, the designer has to conform to a general floor pattern which often prohibits the best solution for a particular unit. It is a difficult problem to add an addition to this type of structure, and there is a lack of flexibility which is most desirable in any hospital building, which must keep abreast of the ever changing demands of medical progress.

Architects in consultation with hospital authorities and the medical profession have produced innumerable solutions in an attempt to find the most suitable shape for a hospital plan. The plans have taken the shape of a T, L, U, X, H, Double H, squares and combinations of these. Then there are hospitals that are composed of multiple buildings; the extreme of these is perhaps the Rudolph Virchon Hospital of Berlin that had 59 separate buildings.

The majority of our hospitals in Canada are under 50 beds and this size of hospital is most efficient with patient accommodation and diagnostic facilities all on one floor. A cruciform plan is perhaps the most suitable for this size of institution.

Hospitals between 100 and 250 beds are probably the ideal size for the majority of our communities and here we find that buildings of 4 to 6 stories fulfil the need very satisfactorily. The actual shape that the building may take is dependent upon a number of factors, but one usually finds that the space required on the ground floor is much in excess of that required for the upper floors.

The problem of designing the modern hospital is one of attempting to foresee the future demands that will be made upon the building by our ever increasing medical knowledge, and also by the development in our society of an awareness of the advantages of preventive medicine and public health generally.

More and more we are thinking of our hospitals as centres for the health of the community. It is recommended that our larger hospitals entertain the possibility of including short term psychiatric patients, and thereby make available early treatment to patients, who if this were not available might become long stay patients in a provincial mental hospital.

Chronic Patient

The problem of the aged and infirm is becoming more and more a problem as medicine continues to increase our life span. If for no other reason than selfish motives, we should have facilities for the chronic patient, so that they may make available beds, which they now occupy in our General Hospitals.

They can be well cared for in hospitals, especially designed for the purpose, and at a much cheaper rate than the per diem rate of a general hospital. They might well be in a wing of a General Hospital or situated close at hand in order to receive proper medical care.

A hospital that fulfils such a need is being operated in Windsor, Ontario, at a rate of $3.91 per patient day. There are many reasons for this low cost. The number of technical staff is less but salaries are not skimped. On the contrary, the Chef, for example, receives $350 per month. There is no monotony of food with over 40 different menus. Everything possible is bought directly from the manufacturers, meatpackers and canners.

Television sets are installed in all day rooms and children's ward. They are very popular and help to bring the outside world into these patients that otherwise would have the hospital grounds as their horizon. Perhaps this is a forecast of what we may expect in the future, particularly for hospitals with long stay patients.

Some hospitals in the U.S.A. are televising surgical operations — some in colour. A surgical light is now being designed in conjunction with a camera for taking coloured motion pictures of operations.

Music Therapy

Music has therapeutic value. Recent research and experiments at the University of Chicago Clinics show that by use of earphones on the patient in the operating room, music is an aid in relieving fears and effectively blocking out the disturbing operating room noises. The anesthetist's findings are less emotional disturbance, and a reduction in quantity of anesthetic used. The surgeons stated it makes for a more relaxed patient, which facilitates their work. Also, the surgeon has much more vocal freedom in teaching. This, of course, is when locals or spinals are given.

And so perhaps progress may dictate a more generous use of music in our hospitals.

Patient Accommodation

Hospitals are built to serve the people and the patient is the most important person in the hospital. It is for the patients' good, no matter how indirectly, that we should strive to improve our institutions. Quiet, rest and good food will go a long way to cure the sick.

We have progressed in the design of patients' rooms. We no longer like to see large wards. One would prefer not more than four beds parallel to the exterior wall and not deeper than two from the window. The patient then has more privacy. It is quieter and the hospital obtains more flexibility in patient accommodation. The only argument in favour of the large wards of the past is cost. It is cheaper to build and cheaper to staff.

We have progressed in our conception of toilet accommodation for patients. A great number of hospitals are now planning toilets directly off each ward, thereby removing the bedpan from the corridors. With early ambulation, this is an important factor, but one should remember that a nurse has often to assist a patient to the toilet. Therefore, this area should not be made too narrow. A second point in this regard is that the modern toilet is no more than 16 to 18 inches off the floor and this is too low

for people with certain abdominal operations or people who may be very weak. The toilet could easily be set up on a terrazzo or concrete curb of 2 or 3 inches. Grab rails on either side of the toilet should also be provided.

Paging and Call Systems

There have been many advances in recent years both in doctors' paging systems and nurses' call systems. Two main systems are visual and audible. Then there are systems which are a combination of both these. Many hospitals in this province have installed audible patient-nurse communication and all who used them seem very pleased with the results. An interesting article appears in the May issue of Hospitals regarding the installation of an audible system in St Luke's Hospital, Cleveland. With this system the nurse can reset the two-way speaker without going to the patient's bedside.

The patient depresses the call button; the pilot light at bedside, corridor light over the door, and bullseye light at the nurses' station all go on. On seeing the patient's light in the master unit, the operator closes the circuit and converses with the patient to determine his needs and dispatch the proper attendant to him.

The patients like the system because the prompt acknowledgment of the call eases their mind, even if it is not possible to render the service at the moment. The hospital likes it because there is much less traffic in the corridors and also as 50 per cent. of calls are for services that can be rendered by someone other than the graduate nurse, or they have been in the nature of questions that can be answered verbally by the ward secretary.

Hospital surroundings should be as homelike and cheerful as conditions will permit. To give you an example of what can be done, the Charlottetown Hospital in P.E.I. has recently completed a large addition and uses a special canvas backed wallpaper, with a plastic surface throughout the wards. When you step off the elevator you are greeted by a very pleasant homelike atmosphere.

Sound Insulation

To-day sound insulation is a "must" in a well designed hospital. It should be in corridors and in all areas where noise originates. There is no reason why it should not be placed in operating and case rooms. In fact, many hospitals in the U.S.A. have installed it in these rooms.

The only precaution is that insulation on ceilings of these room should be fastened mechanically and not placed on the ceiling by means of glue alone.

Conductive Flooring

The development of explosive anesthetic gases brought with it the danger of the possibility of explosions in areas where it was used. The most common danger is from static electricity. This can be overcome by equalizing the electric potential of everything within the room, including the personnel. The logical way to do this is *via* the floor. Consequently, much research work has been done with various materials in order that they meet the standards as laid down by the National Fire Protection Association.

Recently at the Upper Midwest Hospital Conference, we were informed by a member of the Committee set up to study the problem, that there had been, to date, three materials approved for flooring by the Underwriters Laboratories.

The three materials mentioned were:

1: Conducote – Mfgr W. G. Legge Co., 101 Park Ave., N.Y. 17

2: Conductive Staticproof Plastic Flooring, Federal Flooring Corp., 82 West Dedham St, Boston 18, Mass.

3: A conductive type of paint

You will note that the terrazzo gridded floor is not included.

Everything in the room must be grounded to the floor. For details in this regard, I would refer you to pamphlet No. 56, entitled *Recommended Safe Practice for Hospital Operating Room,* 1949 adopted by the N.F.P.A. and N.B. of F.U. The cost is 25 cents and can be obtained from N.F.P.A., 60 Batterymarch Street, Boston 10, Mass.

One word of warning, and it is that just doing half a job in this regard is no good, and further, even with all the precautions, the most important is the constant awareness of operating room personnel of the danger of an explosion.

With the rapid advances in surgical knowledge and a better appreciation of aseptic techniques, there have been improvements in the planning of surgical suites. Hospitals of 150 beds and over should include in their planning a recovery room, located in the surgical suite. A trained staff is in charge of patients during the critical period, oxygen and suction are immediately available and the anesthetist is within easy call, if an emergency should occur.

Central Supply

A central location for sterilization of supplies required for the whole hospital provides for better technique because staff are specially trained to carry out this work. There is no divided responsibility and there is economy of expensive autoclaving equipment. It is desirable to have central sterilizing and supply adjacent to the surgical suite as this unit is the largest single user of sterilized materials. Some autoclaves are now being manufactured with insulated casings. This overcomes the necessity of recessing them into walls.

Taking a tip from industry, one of the latest designs for this area has placed the desk of the nurse in charge of the department out in a central position where she can visually control all procedures in the area and research is now under way to produce equipment so that she has complete control of all autoclaving directly from this desk.

New Materials

Progress has been made in recent years in the development of new materials for buildings. The new materials are mostly with regard to finishes.

The building industry is one of long ages of slow development, where new methods have been grafted on to the established practise of using basic materials and methods. The use of prefabricated bar joists, new metals, light weight concrete, building boards, plywood panels, structural glass and plastics, are all fairly recent developments in construction although we accept them as commonplace today.

Fire Hazard

Then there is the development of fire retardant paints that have excellent qualities and definitely have a place in any of our smaller hospitals that are not of fire resistant construction.

It is not necessary for me to emphasize to this audience the potential danger of fire in our hospitals with examples like Effingham and Mercy Hospital, Davenport, Iowa, still fresh in our memories.

Fire resistant construction is the ideal, with methods of discovering a fire in its incipient stage and combatting it before it can get under way. Then there should be a reliable method of removing patients if the fire cannot be brought under control. Zoning of hospitals by means of fire doors is also very important, especially to keep smoke and heat out of areas occupied by patients. A good sprinkler system, particularly in the basement, where fires are liable to occur, is a great protection. There should also be at least two independent means of egress from every floor and from every separate section of a floor, and inside stairs should be enclosed and of fire resistant construction.

There are many excellent heat actuated alarm systems on the market now to assist you in giving proper protection to the patient. You cannot afford to gamble with their lives. Progress has been made in the development of fire fighting equipment, but one of the most important considerations in this regard is a constant awareness of the hospital staff to the potential danger of fire.

Oxygen

The modern hospital should be piped for oxygen. Such a system pays for itself over the years by a saving in gas and a saving in labour transporting heavy cylinders throughout the hospital. Such an installation means an increase in the initial cost of the building but a saving in operating expense in an amount that will pay for the cost of the system in a few years.

I would recommend piped oxygen for the following areas:

Operating and Case Rooms
Recovery Rooms
Premature and Suspect Nurseries
Emergency Department,

and certain rooms in various wards, particularly medical and pediatric.

Suction

Centralized suction should be included in operating and case rooms, recovery rooms, emergency department, premature nurseries, nose, ear and throat department and in the laboratories.

Pneumatic Tubes

A great deal of a hospital's efficiency depends upon detailed and accurate paper work, which must be transferred to and from various departments. The installation of a pneumatic tube system, particularly in our larger hospitals, is a speedy dependable messenger service that saves time and labour for the staff.

Ultra-Violet Lights

There has been much discussion regarding the value and danger of using ultra-violet lights as a method of reducing airborne infection, particularly in nurseries. It is interesting to note what has been decided in this regard in the new Sick Children's Hospital in Toronto. Individual technique is to be maintained in this hospital for the infant group up to 2 years of age.

The wards for this age group are divided by 7 feet partitions that extend to the floor, with the upper portion glazed. Ultra-violet germicidal lights are located at the top of the partitions and throw a horizontal beam across the top of the cubicle, and another light at the head of the door throws a curtain of light down across the door. This system was tried out in the former hospital where it was found that where the lights were installed, the incidence of cross infection was half that of unprotected areas.

These lights are also used in refrigerators to overcome the forming of molds on food. There is a successful installation of this type in the Bethesda Naval Hospital in Washington which I have seen.

Dietary Department

Finally, I would like to say a word about the progress that has been made in providing good food to the patient and for the staff.

Proper logical planning of the kitchen in relation to storage areas, dining rooms, and speedy transportation to the ward pantries, is recognized as of prime importance. Then the sub planning of the kitchen divided into the various food preparation areas, cooking area, refrigerators, dishwashing, potwashing, dietitians' offices and the various sub-storage areas is of vital importance. If the space allotted is too small, one has inefficiency and bad tempers; if it is too large, then time and energy are wasted.

The aim today in designing the modern institutional kitchen is fewer partitions, more natural light and ventilation, and allowance for easier supervision. There is less space allotted to special diets, as the trend is to include more of the regular food, and to make special diets approach the normal diet as much as possible.

More and more stainless metals are being used for ovens, refrigerators, steam cookers, etc. Rounded corners on equipment and adjustable pipe legs are the trend. The manufacturers are continuously devising new pieces of equipment to assist in the preparation of food in a more efficient manner.

At the recent convention of the National Restaurant Association in Chicago, many new pieces of equipment were shown including:

(a) Revolving ovens that distribute heat more evenly.
(b) Full jacketed steam kettles, which allow fuller use of the kettle and also sloping interior to facilitate easy drain-off.
(c) Automatic pressure type steam cookers with each compartment controlled individually by electrical time clocks.
(d) A new type of dishwashing machine which has no baskets but an endless belt; the dishes are air dried and then removed from the belt.
(e) A new fully automatic silver washer and drier, which

washes, rinses, sterilizes and dries. It takes 3½ minutes to complete the cycle.

They showed a new type of combination range, an electrically operated pot and pan cleaning machine; an electrically operated fish scaler and even a machine for making patties.

There were also new types of radiant food warmers for cafeterias, heated food carts, coffee urns and hot food tables. The manufacturers of such equipment, spurred on by competition, are continually striving for more efficient equipment and so we have progress in this particular field of hospital needs.

Radiology

With the spectacular increase of the voltages attained in X-Ray Therapy and the application of radioactive isotopes to medical treatment, the problem of protection against the harmful effects of radiation becomes increasingly more important; thus placing large radiological departments underground may be the answer to the high costs of protection.

It is difficult to foresee the future needs of this department. Perhaps a cure for cancer may be found or other uses for X-Ray Therapy evolved as well as a more general use of radioactive isotopes.

Progress, we know, is continuous in this particular field and to safeguard the future, it is suggested that the Radiology Department be located between units of the hospital that would not be too difficult or costly to dislodge, if expansion should be necessary.

I cannot close without mentioning one development which none of us are pleased to see, and that is the increasing costs of nearly everything which pertains to hospital construction and operation.

The high costs of hospital care force all to scurtinize their own establishments with a view to increasing efficiency. This is particularly true in regard to personnel with payrolls taking over 60 per cent. of the hospital dollar.

The challenge starts when the architect and hospital superintendent study their plans, for they must provide a structure that is efficient in all respects, but especially, they must reduce wasted effort on the part of those who operate the hospital and care for the sick.

The various labour saving devices and methods that have been produced in recent years must be investigated and their cost evaluated against the saving in operation. It is a case of weighing initial cost as against continuing or operating cost, for these two figures cannot be separated.

I cannot close without paying a sincere tribute to the men and women of the church hospitals throughout our country, who have devoted their lives to the noble cause of alleviating suffering. They are aware of the great advances in medical care, as proved by the many fine hospitals they have built, but, also, they have not forgotten the value of good bedside nursing. Here service goes hand in hand with progress.

ACKNOWLEDGMENTS

1. Ray E. Brown, Superintendent, University of Chicago Clinics, *Silent Music Soothes the Surgical Patient* in Hospitals for May, 1950, page 42.
2. The Nursing Unit, Miss Thelma Dodds, R.N., Director of Nursing, Miller Hospital, St Paul, Minn.
3. Patient-Nurse Communication System, Kenneth J. Shoos, Administrative Assistant at St Luke's Hospital, Cleveland, Ohio in May issue Hospitals.
4. Robert Culter, A.I.A., Skidmore, Owings & Merrill, Architects, Operating Room Materials and Planning.



STRATFORD GENERAL HOSPITAL, STRATFORD, ONTARIO

MARANI & MORRIS, ARCHITECTS

Wallace, Carruthers and Associates Limited, Structural Engineers
H. H. Angus and Associates, Mechanical Engineers
Pigott Construction Company Limited, General Contractors

1st FLOOR PLAN

ADMINISTRATION
1. Toilet
2. Bath
10. Lobby
13. Telephones
14. Information
15. General Office
16. Vault
17. Accountant
18. Records Work Room
19. Records
20. Chapel
21. Toilet and Shower
22. Special Nurses' Lockers
23. Special Nurses
24. Board Room
25. Interne
26. Office Staff Lockers
27. Consultation Room
28. Superintendent of Nurses
29. Superintendent
30. Doctors
31. Waiting Room

X-RAY
32. Physio-Therapy
33. Electro-Therapy
34. Waiting Room
35. Viewing Room
36. Office
37. Film Storage
38. Dressing Room
39. Cardio
40. Deep Therapy
41. Control Room
42. Generator Set
43. Diagnostic
44. Dark Room
45. Diagnostic
46. Plaster Room
47. Emergency Room
48. Emergency Work Room
49. Sterilizing
50. Scrub-up
51. Linen and Storage
52. Dumbwaiter

MEDICAL 23 Beds
Maximum 26 Beds
1. Toilet
2. Bath
3. Special Nurses
4. Nurses' Station
5. Utility
6. Servery
7. Flower Room
8. Sub Utility
9. Janitor
10. Lobby
11. Linen Chute
12. Stretchers





MATERNITY 18 Beds
17 Cribs
1. Toilet
2. Bath
3. Special Nurses
4. Nurses' Station
5. Utility
6. Servery
7. Janitor
8. Sub Utility
9. Flower Room
10. Solarium
11. Linen Chute
12. Stretchers
13. Storage
14. Isolation and Crib
15. Nursery
16. Chart Room
17. Examination and Treatment
19. Demonstration

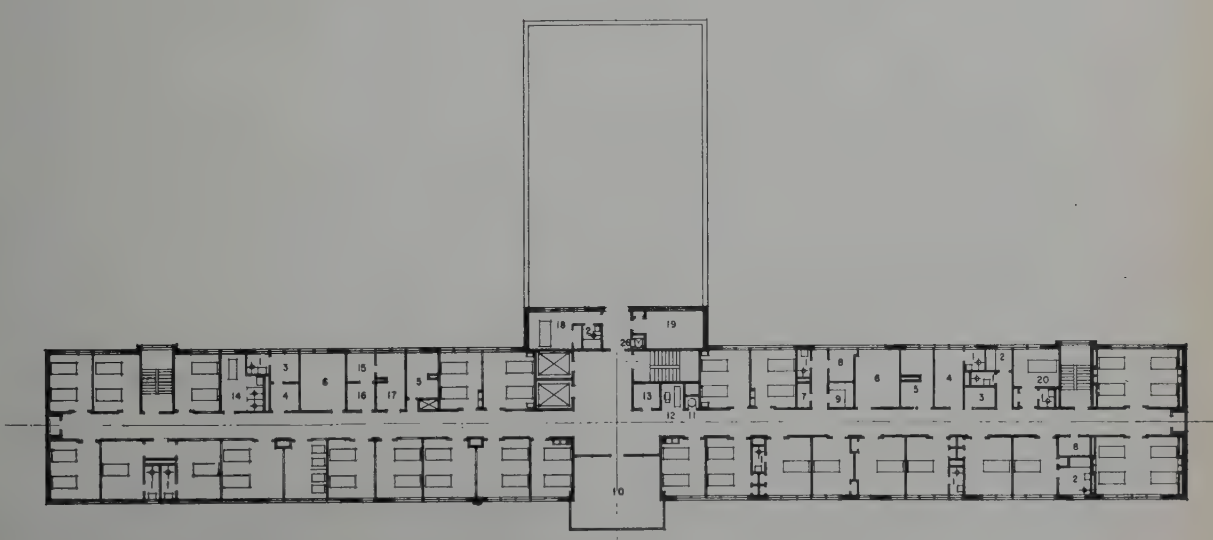
DELIVERY
20. Delivery
21. Sterilizing
22. Scrub-up
23. Clean-up
24. Labour
25. Utility
26. Doctors
27. Shower and Toilet
28. Premature
29. Examination and Treatment
30. Chart Room
31. Nurses' Station
32. Nurses' Lockers
33. Sterile Storage
34. Work Room
35. Visitors' Room
36. Dumbwaiter

▲ **3rd FLOOR PLAN**

SURGICAL 23 Beds
Maximum 26 Beds
1. Toilet
2. Bath
3. Special Nurses
4. Nurses' Station
5. Utility
6. Servery
7. Janitor
8. Sub Utility
9. Flower Room
10. Solarium
11. Linen Chute
12. Stretchers
13. Storage
20. Quiet Room

PEDIATRIC 30 Beds
Maximum 32 Beds
1. Toilet
3. Special Nurses
4. Nurses' Station
5. Utility
6. Servery
10. Solarium
14. Toilet and Bath
15. Consulting Room
16. Waiting
17. Treatment
18. Superintendent's Bed Room
19. Superintendent's Sitting Room
26. Dumbwaiter

▼ **4th FLOOR PLAN**



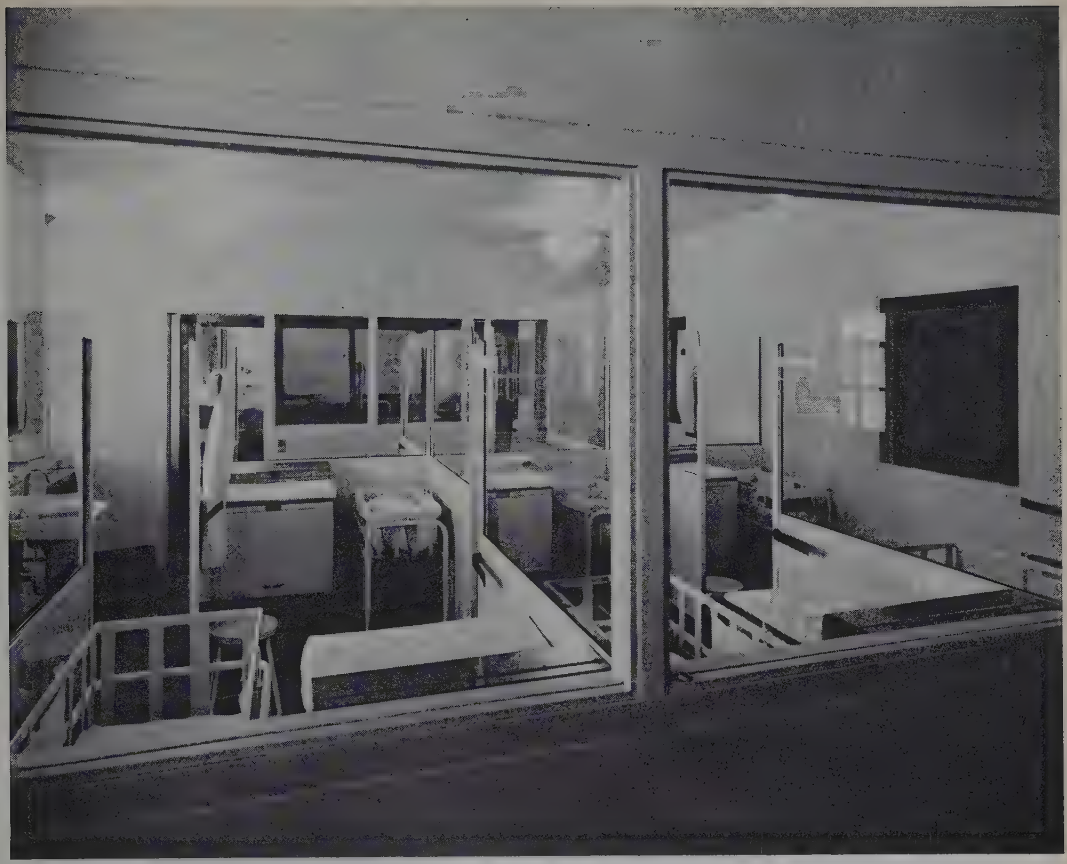


WARNER BROS

DELIVERY ROOM



MAJOR OPERATING ROOM



NURSERY



WAITING ROOM
ON 5th FLOOR



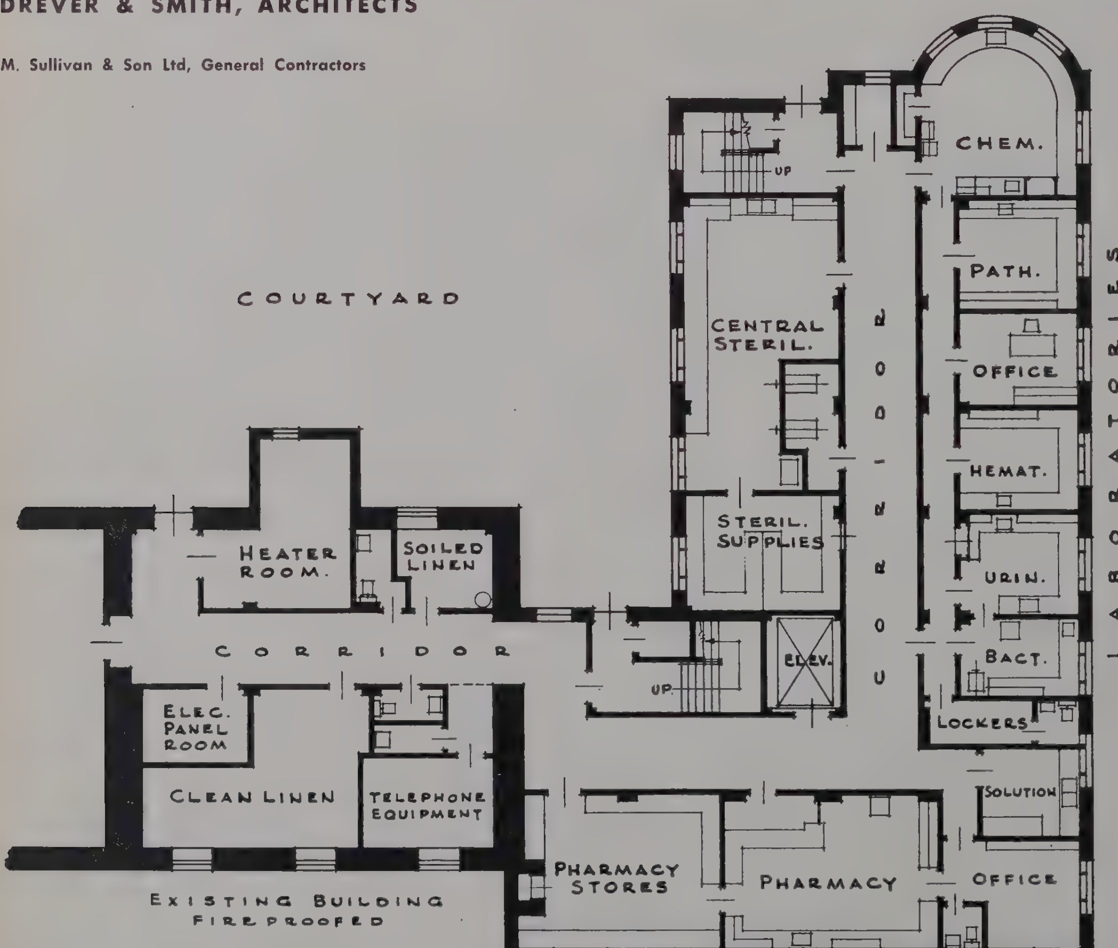
PANDA

VIEW FROM S.W.

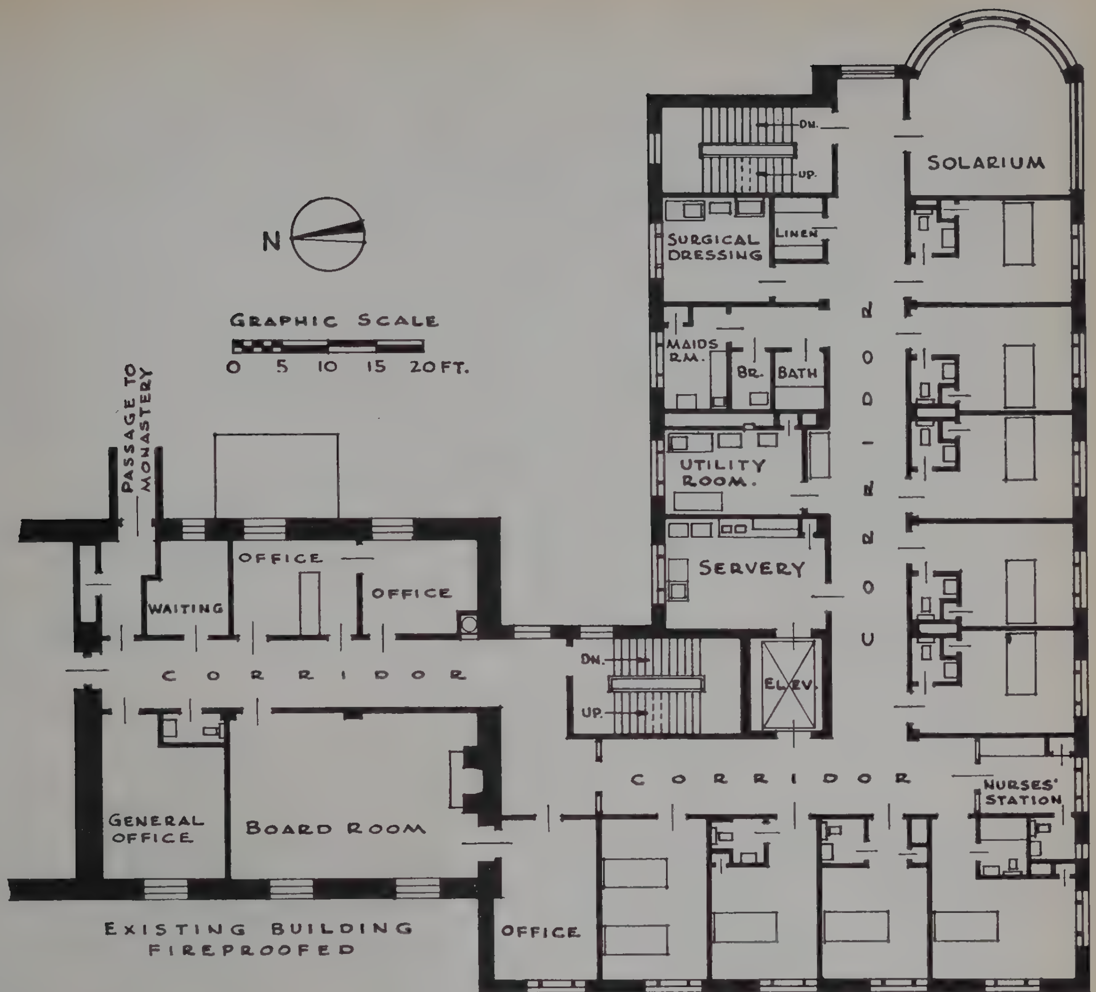
HOTEL DIEU HOSPITAL, CENTENARY WING, KINGSTON, ONTARIO

DREVER & SMITH, ARCHITECTS

M. Sullivan & Son Ltd, General Contractors



1st FLOOR



2nd FLOOR



5th FLOOR



PANDA

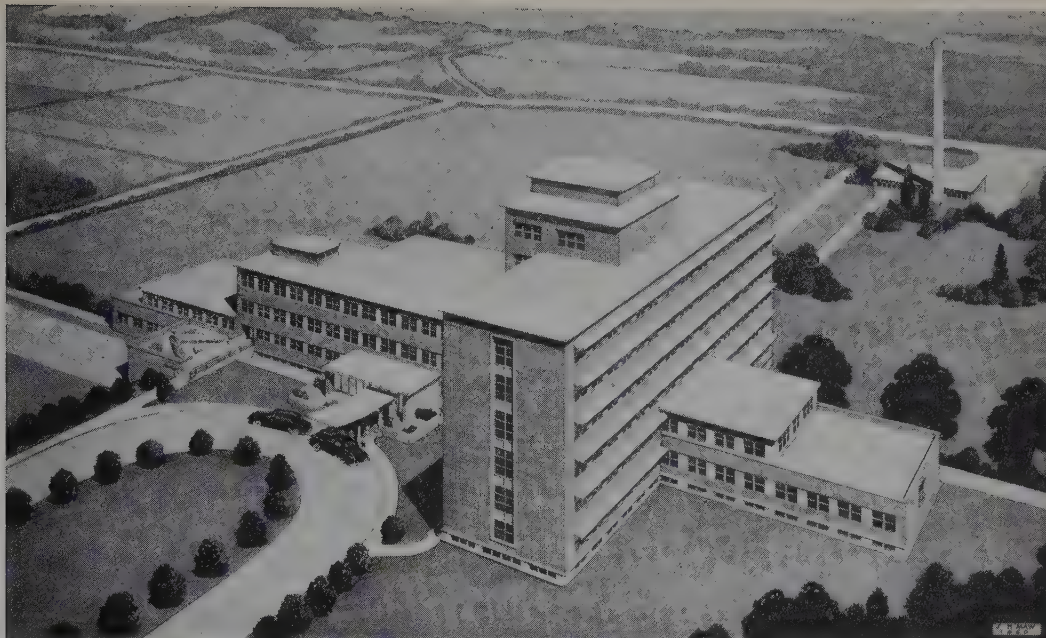
PEDIATRICS WARDS FROM NURSES' STATION



CENTRAL STERILIZING AND SUPPLY



SOLARIUM



NEW GENERAL HOSPITAL, MONCTON, NEW BRUNSWICK

GOVAN, FERGUSON, LINDSAY, KAMINKER, MAW, LANGLEY, KEENLEYSIDE, ARCHITECTS

Morrison, Hershfield, Millman & Huggins, Structural Engineers
Jas P. Keith & Associates, Mechanical & Electrical Engineers
George Hardy Ltd, General Contractor

GROUND FLOOR PLAN ▼

68. Waiting
10. Exam.
12. Public Lavatory
14. Janitors' Closet
16. Pipe Space
20. Lavatory
28. Utility
34. Dark Room
43. Vestibule
83. O.P.D. Entrance
84. Dental
85. Observation Ward
86. Physio-therapy
87. Casualty
88. Ambulance Drivers
89. Ambulance Entry
90. Ambulance Entrance
91. Deep Therapy
92. Superficial Therapy
93. Control
94. General Treatment
95. Storage
96. Rest Room
97. Dressing Room
98. Gastric
99. Wet Film Viewing
100. Radiographic
101. Radiologist's Office
102. Viewing
103. Secretary, X-Ray
104. Mobile X-Ray
105. Fracture
106. Cystoscopic
107. Photo
108. Unsterile Bulk Stores
109. Clean-up Area
110. Central Supply
111. Equipment Space
112. Sterile Stores
113. Pharmacy
114. Fan Room
115. Compressor
116. Garbage-Refrig.
117. Can Wash
118. Meat Refrig.
119. Vegetable Store
120. Kitchen Elev. Hall
121. Receiving Entrance
122. Access to Elev. Pit
123. Explosion Proof Vault
124. Electrical Room
125. General Stores
126. Telephone Equipment
127. Mechanical Equipment
128. Pit
129. Pneumatic Tube Exchange
130. Female Help Lockers
131. Male Help Lockers
132. Staff Nurses' Lockers
133. Technicians Etc. Lockers
134. Student Nurses' Coat-Room
135. House Keepers' Store
136. House Keepers' Office
137. Sewing Room
138. Laboratory
139. Morgue Refrig.
140. Ante-Room
141. Autopsy Room
142. Office
143. Secretary, Purchasing Dept.
144. Purchasing Office
145. Unassigned



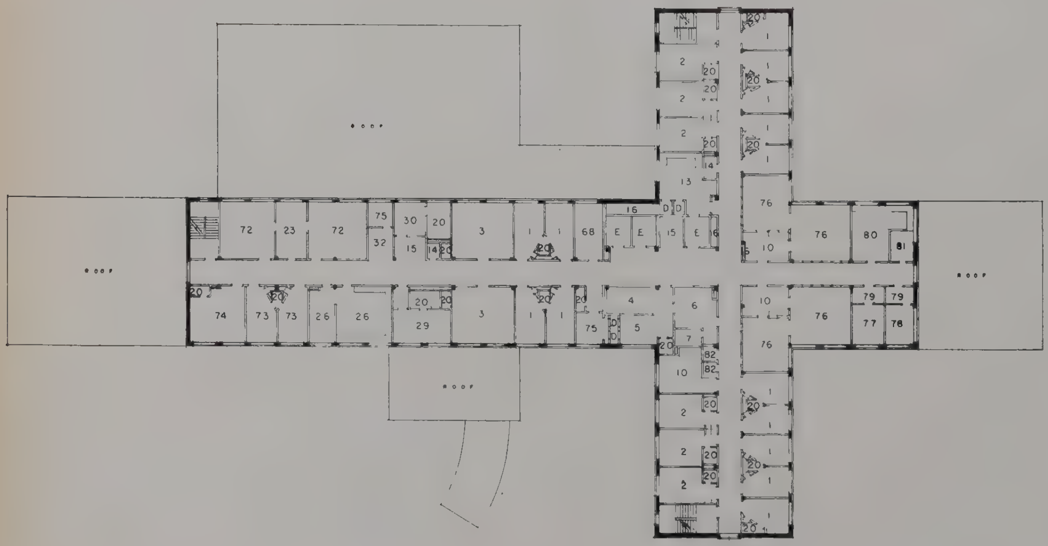


1st FLOOR PLAN ▲

1. 1 Bed-room
2. 2 Bed-room
3. 4 Bed-room
4. Soiled Utility
5. Clean Utility
6. Nurses' Station
7. Medicine
8. Bath
9. Sitz Bath
10. Exam. Room
12. Public Lavatory
13. Pantry
14. Janitors' Closet
15. Stretcher Space
16. Pipe Space
20. Lavatory
28. Utility
36. Closet
39. Nourishment Centre
40. Nursing Office
41. Nurses' Secretary
42. Director of Nursing
43. Vestibule
44. Lobby
45. Information Desk
46. Telephone Exchange
47. Minograph
48. Admitting
49. Cashier's Cage
50. General Office
51. Vault
52. Office Manager
53. Doctors' Entrance
54. Doctors' Lounge
55. Records' Room
56. Conference Room
57. Library
58. Director's Office
59. Director's Secretary
60. Dish Collection
61. Vegetable and Fruit Refrig.
62. Dairy Refrig.
63. Meat Refrig.
64. Daily Stores
65. Holding Refrig.
66. Assistant Dietitians
68. Waiting
69. Special Diets
70. Kitchen
71. Cafeteria.

▼ 2nd FLOOR PLAN

1. 1 Bed-room
2. 2 Bed-room
3. 4 Bed-room
4. Soiled Utility
5. Clean Utility
6. Nurses' Station
7. Medicine
10. Exam.
13. Pantry
14. Janitors' Closet
15. Stretcher Space
16. Pipe Space
20. Lavatory
23. Scrub and Sub Ster.
26. Nurses' Work Room
29. Nurses' Lockers
30. Doctors' Lockers
32. Records
68. Waiting
72. Delivery
73. Labour
74. Labour and Delivery
75. Storage
76. Nursery
77. Premature
78. Suspect
79. Ante-room
80. Formula
81. Bottle Wash
82. Shower







PENTHOUSE PLAN

▲ 3rd FLOOR PLAN

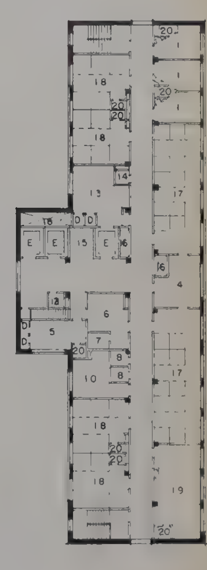
1. 1 Bed-room
2. 2 Bed-room
3. 4 Bed-room
4. Soiled Utility
5. Clean Utility
6. Nurses' Station
7. Medicine
8. Bath
9. Sitz Bath
10. Exam. Room
11. Visitor's Room
12. Public Lavatory
13. Pantry
14. Janitors' Closet
15. Stretcher Space
16. Pipe Space
20. Lavatory
21. Operating
22. Equipment Stores
23. Scrub and Sub-ster.
24. Orthopedic
25. Anaethesia Store
26. Nurses' Work-room
27. Sub-ster.
28. Utility
29. Nurses' Lockers
30. Doctors' Lockers
31. Recovery Room
32. Records Room
33. Sterile Stores
34. Dark Room
35. Intern's Bed-room
36. Closet Space
37. Fan Space
38. Elev. Machine Room

▼ 4th & 5th FLOOR PLANS



1. 1 Bed-room
2. 2 Bed-room
3. 4 Bed-room
4. Soiled Utility
5. Clean Utility
6. Nurses' Station
7. Medicine
8. Bath
9. Sitz Bath
10. Exam. Room
11. Visitors' Room
12. Public Lavatory
13. Pantry
14. Janitors' Closet
15. Stretcher Space
16. Pipe Space
17. 11 Crib Ward
18. 5 Bed Ward
19. Play Room
20. Lavatory

AND 6th FLOOR PLAN ▼



This article was first published in The Canadian Hospital for February 1951 and is here reprinted by permission

H. H. MADILL

THE ARCHITECT AND THE HOSPITAL BOARD

When the requirements of a hospital project have been decided upon by the Board of Trustees, it is the architect's problem to design a building which will meet these requirements to the best advantage, taking into consideration the comfort of patients and the efficiency with which the medical, nursing, and administrative staffs, may carry out their work. He will select the materials and methods of construction from the standpoint, not only of original cost but, also, and this is of even greater importance, from the standpoint of economy of maintenance and operation of the plant.

The Building Committee

There must be the closest relationship between the board and the architect during the development of the project. Since the board is usually composed of a fairly large group of citizens representing various sections of the community, this relationship can best be carried on through a building committee. The committee would be appointed by the board and consist of a small group of keenly interested persons who would be willing to give the time necessary for the consideration of the many diversified problems involved. Where possible the committee should include at least one person with a knowledge of building. His experience and his ability to interpret architect's drawings in blue print form will do much to facilitate the work of the committee. Other members of the committee should be familiar with the needs of one or more of the various departments of the hospital and interpret their needs in the development of the scheme. All matters relating to the project should be handled through this committee which will make its recommendations to the board in the presence of the architect. The architect gains much by firsthand knowledge of board discussions. Points arise which he will note in his own minutes. He may wish to bring forward new ideas, not previously discussed in committee, arising out of the discussions of the board. He may be able to defend points about which he is particularly enthusiastic and he may be able to elucidate certain complicated matters better than the chairman or members of the committee.

Selecting the Architect

One of the first duties of the committee is to select the architect, for the approval of the board. The design of a hospital is such a specialized problem that an extensive knowledge of the most recent developments in planning equipment is essential. If there is a local architect who has had the necessary experience, he should be given every consideration. If the local architect has not had this specialized experience, the work might be handled in either of two ways:

(a) A firm experienced in hospital work would be appointed as architects with the local firm acting as associate architects. In this case, the former would be responsible for the entire project. They would prepare the preliminary studies, the working drawings, the specifications, and details. The associate architects would supervise the work of construction and generally act as liaison between the building committee and the architects.

(b) The local firm might be employed as the architects with a firm experienced in hospital work acting as consulting architects (not to be confused with hospital consultants). Under this arrangement the consulting architects would plan the building in the form of preliminary studies and advise on the construction and equipment. From these studies the architects would prepare the working drawings and specifications and supervise the construction of the building.

Some members of the board may ask if stock plans of hospitals of various sizes are not available. It will be found that the requirements of any two communities are never identical and an attempt to use plans prepared for another locality may result in the adoption of unsuitable or obsolete ideas. In such a case development in building research is retarded and it is more difficult to make the changes which are continually being introduced in hospital design.

Selecting the Site

The architect should be appointed before the site has been officially decided upon. Many of the factors concerning the site will be obvious to all members of the building committee but others may be overlooked unless investigated by the specialist. Such items are:

1. Drainage of the site and nature of the soil—clay, rock, quicksand or filled ground.
2. Availability of water supply, electricity, gas, and telephone services, sanitary sewers, and storm sewers.
3. Orientation, as it is important in the Canadian climate to take advantage of southern exposure and desirable prevailing winds.
4. Sufficient area for present requirements and future extensions.
5. Transportation — walking distance to street cars or

buses — good roads for motor cars and ambulances.

6. Parking facilities.

7. Quiet location off main thoroughfare and away from noise, smoke, dust, and objectionable odours of industries.

8. High ground to provide good outlook and circulation of air.

9. Relative costs of different sites. The advantages and disadvantages must be weighed.

10. Local planning board projects including arterial roads, zoning, et cetera.

Preliminary Studies

Probably the most important contribution of the architect is the skill and creative ability which he brings to solving the problem as presented by the board. The results of this are presented in the form of preliminary studies. The planning of each department and its relation to the scheme as a whole will be solved in detail. In fact the success of the whole scheme will depend on the decisions made at this stage. All bylaws and regulations must be complied with, not the least important being the requirements of the provincial government on which grants are based.

Contract Documents

When the preliminary studies have been approved by the board and the government departments concerned, the architect translates them into working drawings and specifications. These are legal documents which show in detail the work required of each and every trade, from the excavation to the last piece of finishing hardware.

The working drawings and specifications are then issued to contractors who will each submit a price for which they will contract to carry out the work. The architect will advise on the selection of the contractor and will explain to the board the implications of such sections of the documents as guaranty bonds, liability insurance, and mechanics liens.

Construction of the Building

During the period of construction, the architect will inspect the work to see that the requirements of the contract are fulfilled. Payments to the contractor are usually made once a month. These are made on certificates issued by the architect after he has checked the value of the work completed to that time and has made deductions for previous payments, provision for mechanics liens, et cetera. In this way the board is protected in the financial transactions between it and the contractor.

In completing the project the architect will advise on the equipment, furnishings, and decoration. It is realized now that the "institutional feeling" produced by buff and green colours in older hospitals is quite undesirable. The theory and practice of colour therapy are recognized and accepted by the medical profession. Certain colours or combinations of colours excite, disturb, or depress, while others induce repose or happiness. There are "warm" and "cool" colours, as well, that can be used to advantage in northern or southern aspects or for rooms where warmth or coolness is desirable. In making his recommendations, the architect will be guided by the latest studies which have been made by experts in this field.

The building of a hospital is the combined effort of a team consisting of the board, the hospital consultant, the administrator, and the architect. The degree of success will be in direct relation to the ability of the group to work as a team. Each makes an important contribution and helps to bring about the desired result — a hospital which will be the pride of the community.



PANDA

VIEW LOOKING N.E.

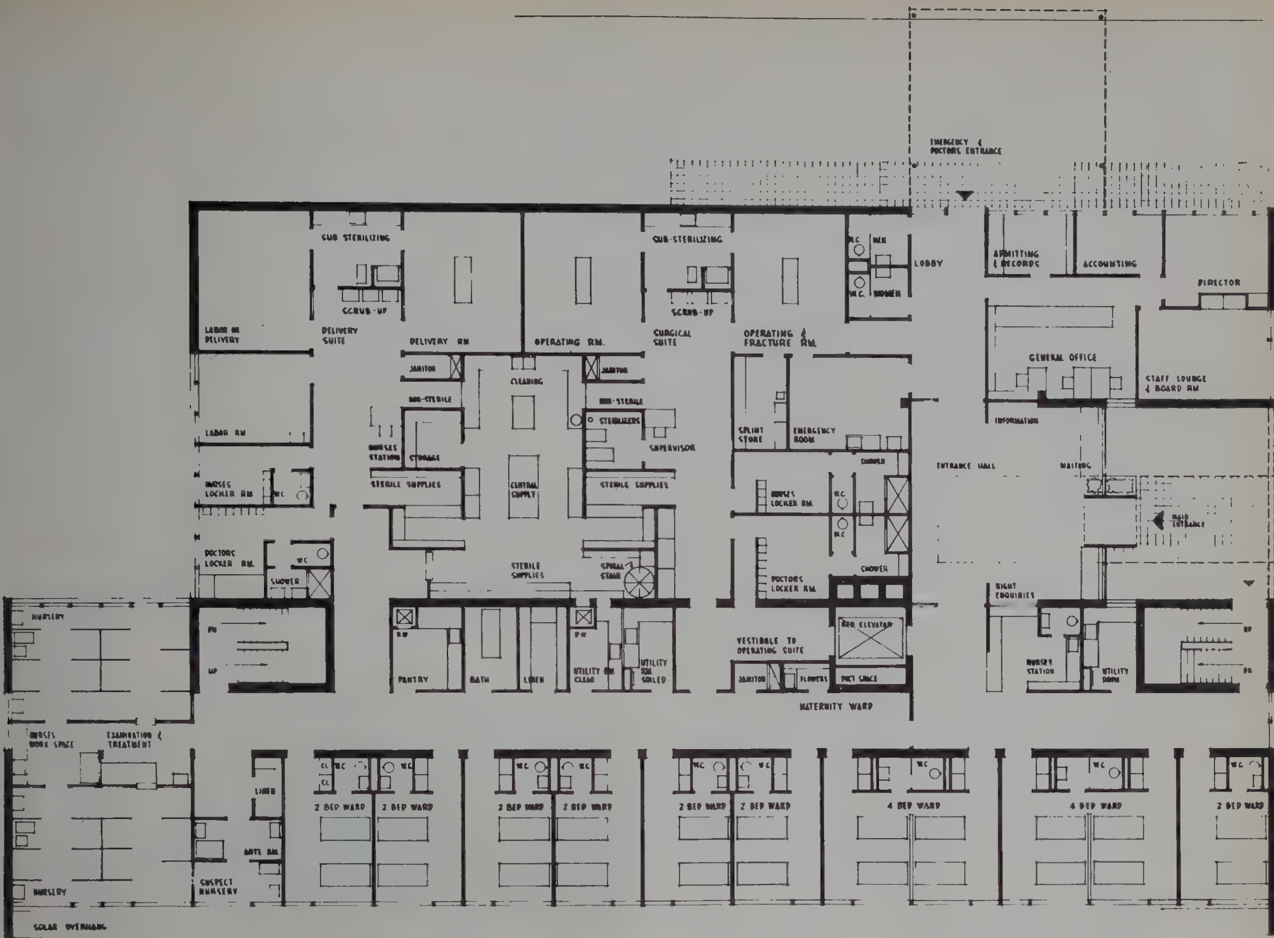
HUMBER MEMORIAL HOSPITAL, WESTON, ONTARIO

JOHN B. PARKIN ASSOCIATES, ARCHITECTS

General Contractors: Fried Construction Company Limited

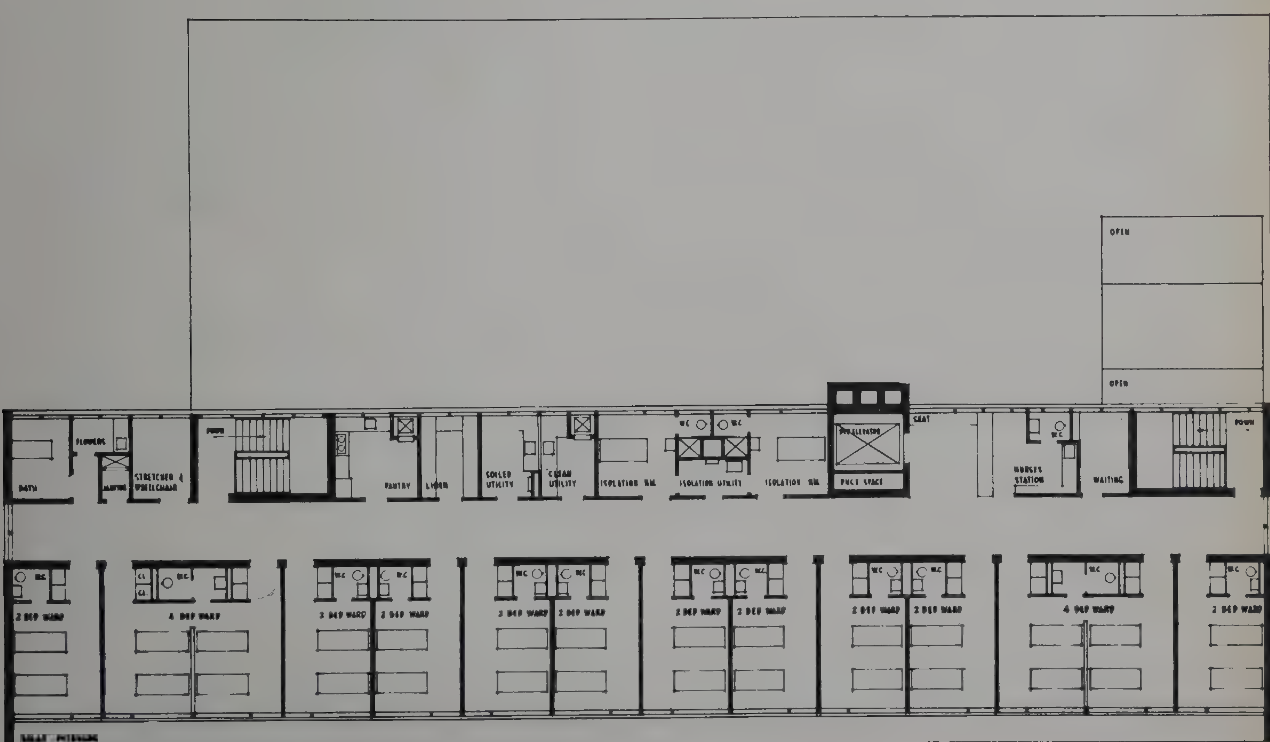
BASEMENT





1st FLOOR

2nd FLOOR



PANDA



MAIN ENTRANCE CANOPY



MAIN LOBBY



TYPICAL PANTRY

COVER

GENERAL VIEW OF NURSERY LOOKING SOUTH



TYPICAL TWO BED WARD



TYPICAL TWO BED WARD



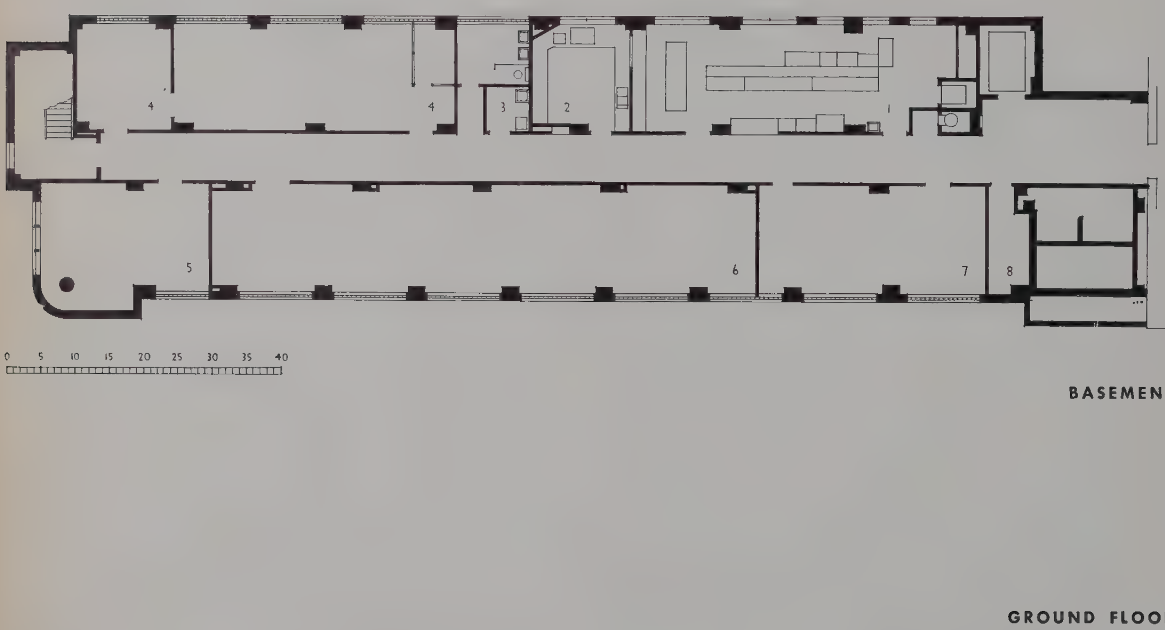
PANDA

VIEW FROM S.E.

ST MICHAEL'S HOSPITAL ADDITION, TORONTO

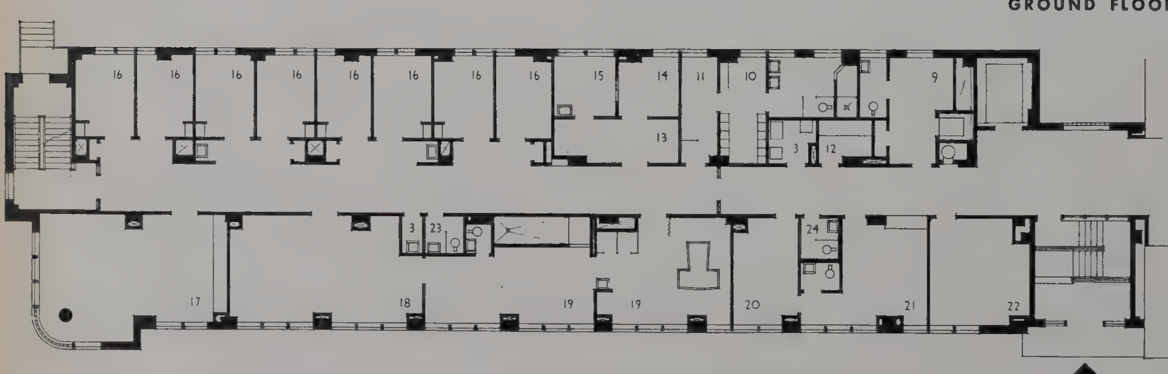
W. L. SOMERVILLE, McMURRICH & OXLEY, ARCHITECTS

Edgar A. Cross, Consulting Engineer
H. H. Angus and Associates Ltd, Mechanical Engineers
Pigott Construction Co. Limited, General Contractors



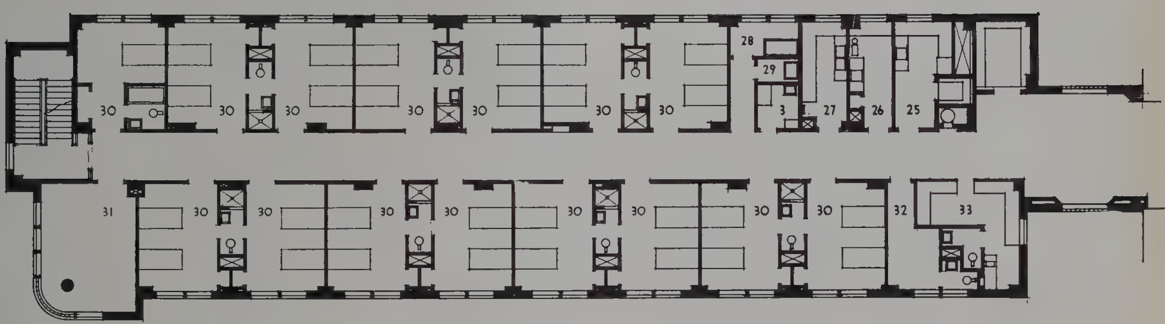
BASEMENT

GROUND FLOOR



LEGEND TO ALL FLOORS

1. Serving Kitchen
2. Dishwashing
3. Janitor
4. Grocery Storage
5. Sewing Room
6. Dry Goods Storage
7. Equipment
8. Electrical
9. Consultant
10. Staff Lockers
11. Staff Room
12. Linen
13. Encephalography Office
14. Patient
15. Operator
16. Treatment Cubicle
17. Occupational Therapy
18. Gymnasium
19. Hydrotherapy
20. Private Waiting
21. General Office
22. Public Waiting
23. Men
24. Women
25. Servery
26. Clean Utility
27. Soiled Utility
28. Bath
29. Sitz Bath
30. Ward
31. Solarium
32. Superintendent
33. Nurses' Station
34. Soiled Clothes
35. Sub-Utility
36. Teaching
37. Formula
38. Clean-up
39. Examination
40. Nursery
41. Work Room
42. Premature Nursery
43. Observation Nursery
44. Doctors
45. Nurses' Dressing

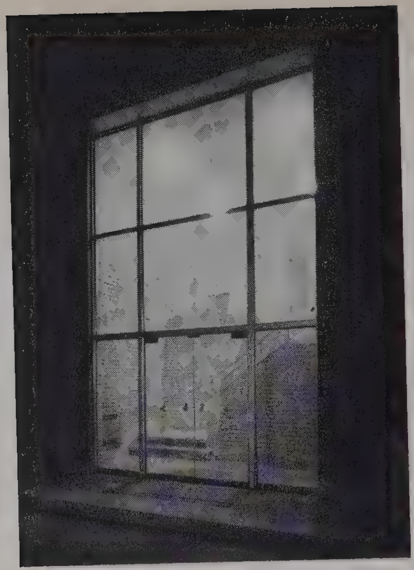


TYPICAL FLOOR

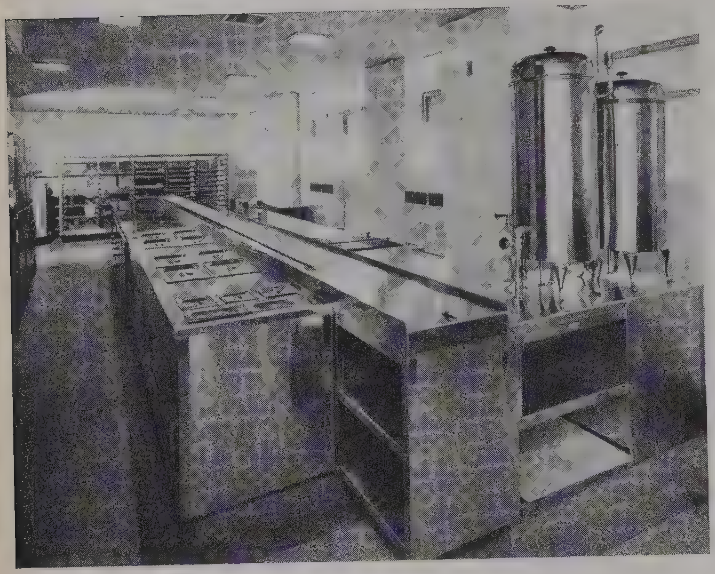
7th FLOOR



PANDA



ENTRANCE



KITCHEN



WEST NURSERY



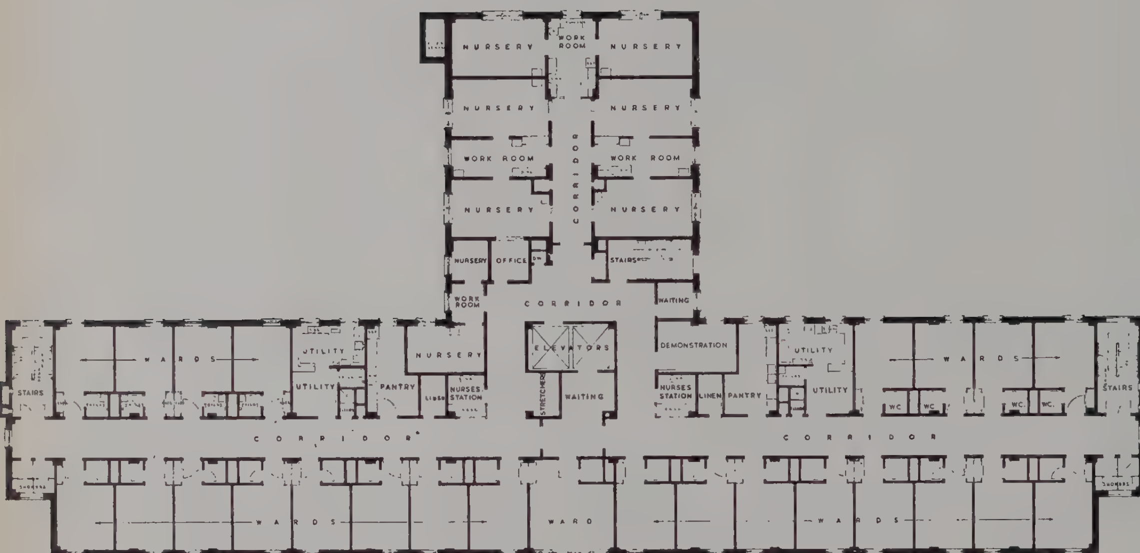
WINNIPEG GENERAL HOSPITAL, MATERNITY PAVILION, WINNIPEG, MANITOBA

NORTHWOOD AND CHIVERS, AND MOODY AND MOORE, ASSOCIATED ARCHITECTS

Cowin and Company Ltd, Structural Engineers
E. H. Price, P.E., Mechanical Engineer
Bird Construction Company Limited, General Contractors

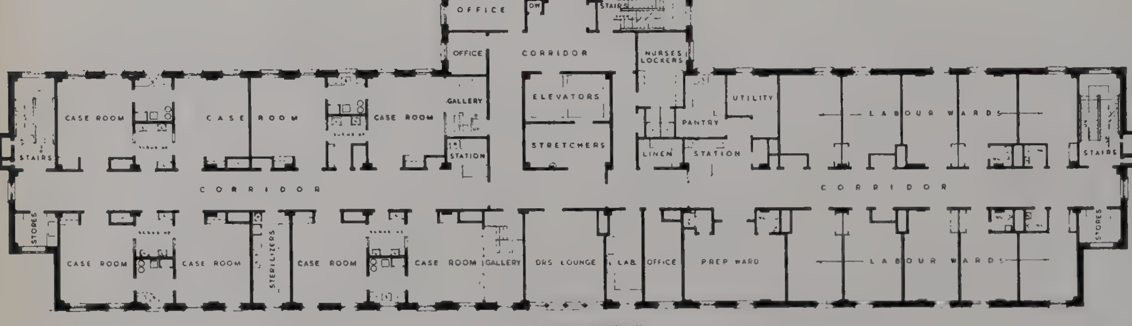


GROUND FLOOR PLAN

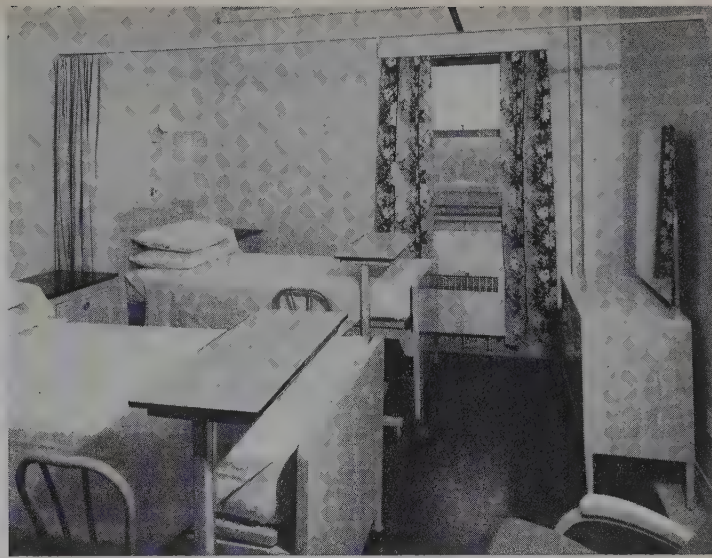


TYPICAL NURSING FLOOR PLAN

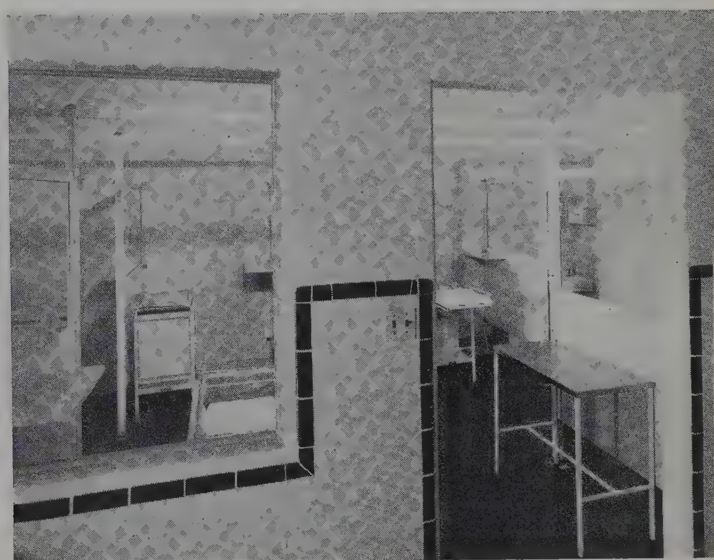
4th FLOOR (OPERATING) PLAN



G. RAY CHRISTIE



2 BED ROOM



PART OF THE NURSERIES



CASE ROOM

EARL A. LEVIN

ARCHITECTURE ON THE SOUTH BANK

WORLD'S FAIRS and International Expositions in the past, from Britain's 1851 Exhibition to the New York World's Fair, have led us to expect a certain characteristic pattern in such spectacles. Britain's 1951 Festival, however, will be different. It is not a "Trade Fair" in the sense that these others have been. Its object is to exhibit Britain's contributions to civilization in the fields of the arts, sciences, technology and industrial design. Unlike other Expositions, too, it will not be confined to a single city or locality, but will use the whole of the United Kingdom as a background for its activities. There will be ten exhibitions divided among London, Edinburgh and Glasgow; twenty-four Festivals of the Arts, ranging from Inverness in Scotland, to Bournemouth on the South Coast of England, and Belfast in Ireland; an elaborate Pleasure Garden at Battersea Park; a land travelling exhibition which will visit four cities in the Highlands; a seagoing exhibition mounted in the Festival ship "Campania" which will visit ten of the principal ports in the British Isles.

Architecturally, however, the focus of the Festival is the South Bank Exhibition, with another focus at Poplar where the redevelopment of a blitzed area—the Lansbury Development — is being included as a "Live Architecture" exhibit.

The South Bank site is an area that has long been a problem to London, consisting as it did of 27 acres of derelict land, covered by abandoned industrial buildings, broken down warehouses, collapsed jetties and river traffic facilities, located on the south bank of the river Thames in the heart of London, immediately opposite the proud urban skyline of its administrative and entertainment centre. As long ago as 1935 the London County Council expressed its anxiety to clear and redevelop the area. Until the war, however, nothing was done except the construction of the new Waterloo Bridge, and the initiation of legal procedure to acquire the property. During the war the area suffered heavy bomb damage, and much of the property acquired by the Council was razed to the ground. In 1948, Sir Patrick Abercrombie in his County of London Plan suggested that the site be redeveloped as a great cultural centre, including among other buildings, a theatre, concert hall, offices and headquarters for various organizations. Even so it seemed unlikely that the Council could accomplish such a redevelopment unaided. When the National Government announced that it planned to stage a Festival and had chosen the South Bank as its site, the possibility of realizing the vision of the County of London Plan was brought within reach. It is this background of events which lies behind the fact that the Concert Hall is the only structure in the entire Exhibition which will be left standing when the Festival has ended. It will form part of the redevelopment of the area, final details of which have not yet been published.

Altogether, there will be about thirty buildings on the South Bank site, including administration buildings and some fourteen restaurants and cafés. There is also a quantity of outdoor display. Some of Britain's leading sculptors and painters have been commissioned to execute works which will be incorporated in the broad general design of the Exhibition. Each building is designed by a different architect or group of architects, ranging from men with international reputations, such as Maxwell Fry, to the young and still comparatively unknown Architect's Co-operative Partnership. But the whole is supervised and co-ordinated by a panel of five, who have also designed the lay-out for the site. These five are Hugh Casson (Director of Architecture for the Festival), Misha Black, James Gardner, James Holland, and Ralph Tubbs.

The Hungerford Railway Bridge cuts across the site at high level, dividing it roughly in half. This division is used to develop the theme of the Festival — that British achievement is the result of the interplay of two forces: the character of the people and the resources of the land —in two sequences of buildings. Those buildings upstream from the bridge deal with the land, those downstream, with the people.

Both sequences will each have its own main starting point and there will be a logical development in the story from one building to the next. All sections, however, will be complete in themselves and the visitor can of course follow his own inclination in the matter of sequence.

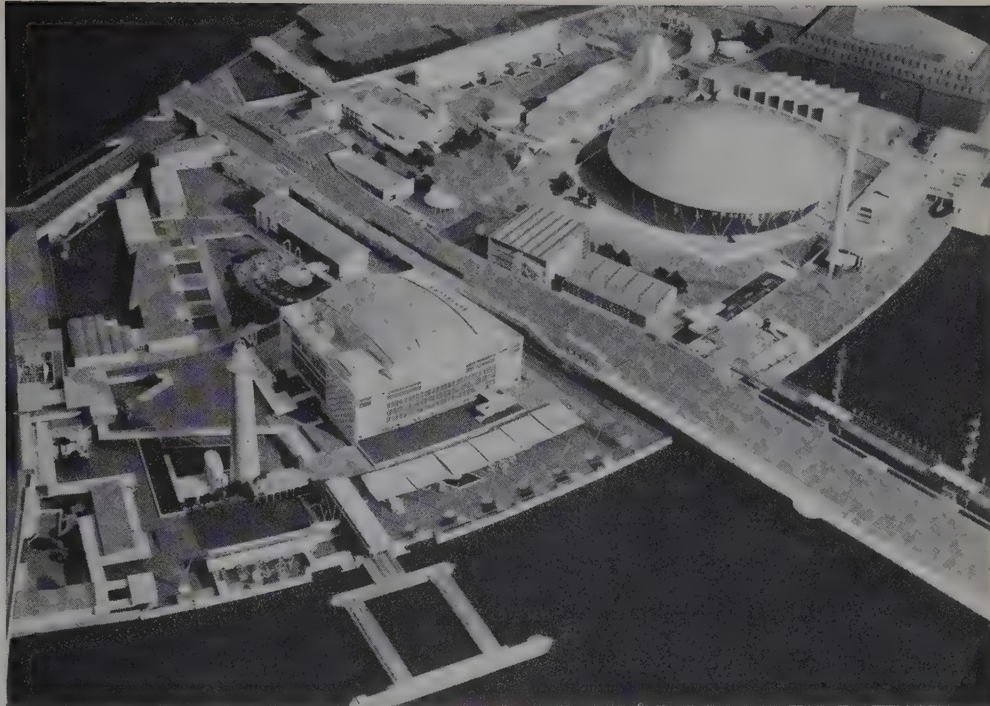
The starting points of both sequences will be on the main concourse which runs at right angles to the river. It is approximately 400 feet long by 150 feet wide and is sunk slightly below the level of the surrounding ground. The two sequences are entered from either side of the main concourse through two cone-shaped aluminium covered canopies.

Taking the recommended circulation, and beginning, say, with the upstream sequence, the story will develop through the following pavilions:*

The land of Britain (5). This section introduces the upstream sequence. It shows how the British Isles were

*Numbers in parenthesis refer to key plan.

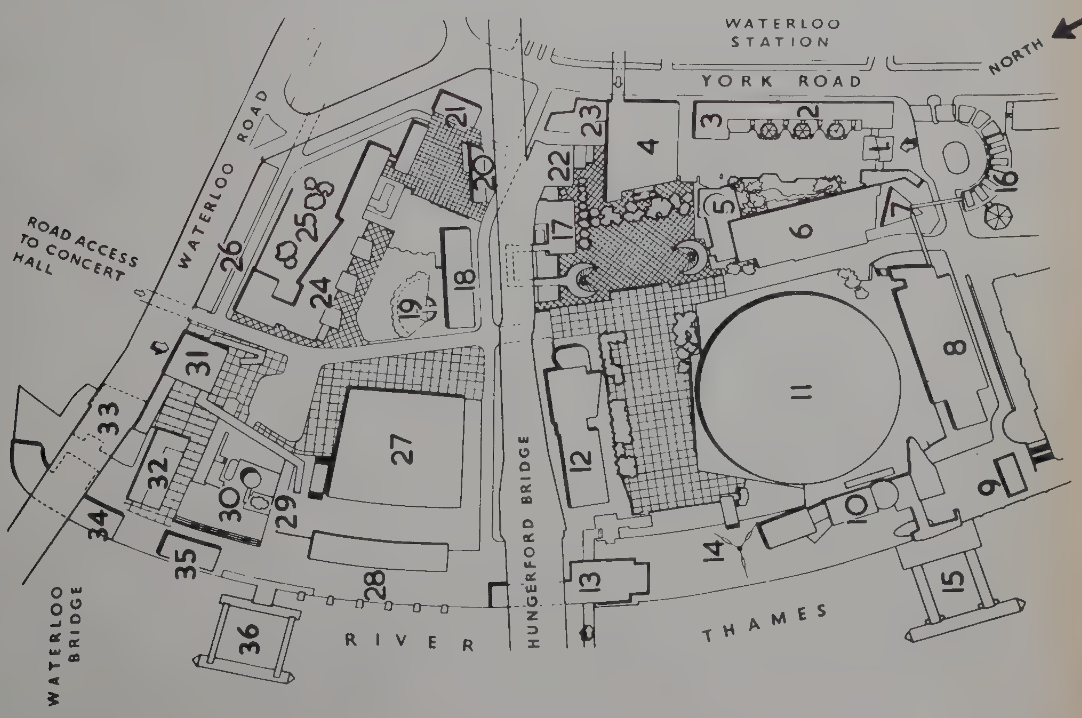
Birds-eye-view of the model of the South Bank Exhibition, Festival of Britain 1951



BRITISH OFF. PHOTO

1. Chicheley Street Gate
2. Information and Post Office
3. Fairway Cafe
4. Station Gate, Escalator Hall for Underground below
5. The Land of Britain
6. The Natural Scene and the Country
7. Minerals of the Island
8. Power and Production
9. The '51 Bar
10. Sea and Ships
11. Dome of Discovery
12. Transport and Communications
13. Regatta Restaurant and Embankment Gate
14. The Skylon
15. Landing Stage
16. Administration Block
17. The People of Britain
18. The Lion and the Unicorn
19. Unicorn Cafe
20. Television
21. Telecinema
22. Locomotive Exhibit, Turntable Cafe below
23. Police and First-Aid
24. Homes and Gardens
25. Courtyard
26. Administration and Staff Canteen
27. Royal Festival Hall
28. Seaside
29. 1851 Centenary Pavilion
30. Shot Tower
31. Waterloo Bridge Gate— The New Schools and Design Review below
32. Harbour Buffet
33. Health
34. Thameside Cafeteria
35. Sport
36. Rodney Pier
37. Sport
38. Landing Stage

Plan of the South Bank Exhibition, Festival of Britain 1951



formed, the origins of their natural resources, and their varied landscape.

The Agricultural Pavilion (6) will have an introductory section showing how the wild life of Britain varies from one area to another, the interdependence of animals and plants, and how man has modified the landscape. This will lead into the section dealing with rural life and agriculture. The centre part of this pavilion consists of a 60 foot span, open Dutch barn, with flat roofed, two storey buildings at either end. These are enclosed with walls of natural stone and other materials typical of farm buildings. A glazed gallery runs the length of the first door. On the ground floor are stock pens and displays of agricultural machinery.

The Natural Resources Pavilion (7) will exhibit the raw materials of Britain. It is a reinforced concrete structure, standing on a podium. It is a tetrahedron in shape, and from the interior, the forced perspective created by the batter of the walls give the impression of being at the bottom of a mine shaft. The exterior is faced in precast concrete blocks treated to suggest a coal facing.

Across the courtyard from the Agriculture and Raw Materials Pavilions is a series of buildings comprising a Post Office (2), Information Offices, Cloakrooms, and a Restaurant (3). It is entered from the courtyard over three footbridges across a decorative canal. Each of these bridges has on it a free-standing Information Kiosk. Over this group of buildings is the main perimeter screen, built of steel scaffold tubes and carrying an intricate arrangement of coloured canvas panels.

At the South end of the courtyard is the Chicheley Street entrance to the Exhibition. This entrance is covered by a free-standing reinforced concrete canopy (1) of daring design. Beyond this, a turning courtyard for wheeled vehicles is provided, and following the arc of the courtyard, on the south boundary of the site, is the curved Administration Building. The public side of this building, on the ground floor, has a wide corridor behind which are offices looking on to a small garden. The first floor consists of a series of boxes suspended from steel bipods, and connected by a closed corridor. A light aluminium bridge connects this block with the tetrahedron of the Raw Materials Pavilion.

At the north end of the courtyard is the Waterloo Station two-level entrance (4). This building is planned to accommodate the escalator head from Waterloo Underground Station. The ground floor is mainly devoted to entrance facilities. The first floor links with Waterloo Station by means of a footbridge at high level across York Road. The building is a light frame construction, part reinforced concrete, part steel. The roof is suspended from laminated wood arches.

Returning to the sequence of exhibition buildings proper, we come next to the Power and Production Pavilion. Here will be exhibited the harnessing of power, the uses and processing of metals, the rôle of research, design and management in industry. The building is of a tubular steel constructions, about 50 feet high and 300 feet by 100 on plan. It is covered externally with glass, corrugated asbestos, and brick panels. There is a gallery from which the ground floor exhibition can be viewed, and which itself accommodates exhibits.

Moving on towards the river, the next building is the Sea and Ships Pavilion (10). This will display many aspects of Britain's marine activity, from engines and a ship testing tank, to small fishing tackle. The pavilion consists of a series of Portal frames of light steel construction approximately 50 feet wide, 300 feet long and 40 feet high. In addition there is a platform some 50 feet away from the main block, overlooking the arrival landing stage on the river front and linked with the main block by a prestressed concrete bridge. This is about 12 feet above the ground. There is an internal gallery to the main block at the same height. The main floor is at different levels to accommodate the various exhibits. Facing is aluminium, asbestos sheeting, and canvas. The rear elevation of the building will carry a 40 foot square relief sculpture by Siegfried Charoux, and in front of it, on the river edge, will be a mobile water display.

The Transport Pavilion (12) deals with air, rail, road, and sea transportation. It will display a number of full size examples of contemporary locomotives, road vehicles, aircraft and ship equipment. Working models will be used including those of docks and airports, and the rôle of radio and radar as used in transport operations will be featured. The ground floor of this building is open and laid out to display the heavier exhibits. There are three galleries at different heights behind the fully glazed upper façade. The building is steel frame, about 250 feet long and between 40 feet and 60 feet wide.

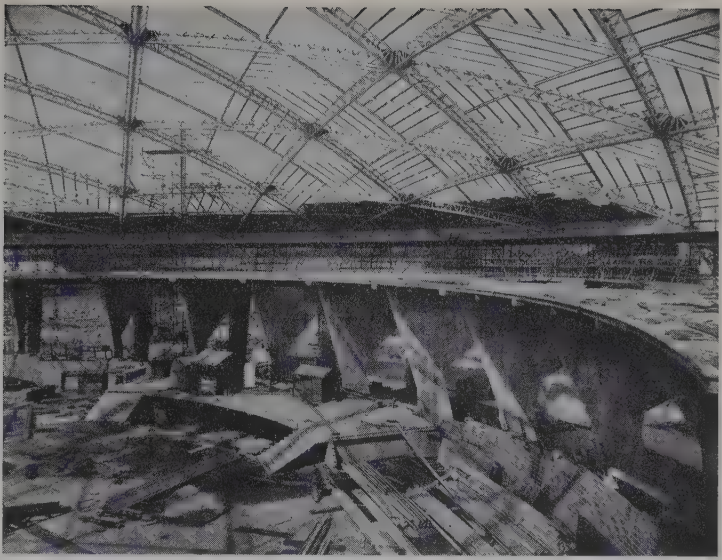
Finally in the upstream sequence is its principal pavilion, the Dome of Discovery (11). It will house the exhibits dealing with British achievement in the realm of exploration and scientific research. One section will display the latest knowledge of the structure and nature of matter, culminating in a display of nuclear energy. Others will be concerned with land, sea, and Polar exploration, Inner Space, Outer Space, and the living world. The structure is the largest dome in the world — 365 feet in diameter, 45 feet to the eaves, and 93 feet to the apex of the dome. It stands on a stepped podium and is supported by sloping latticed steel struts forming equilateral triangles, pin jointed at top and bottom. The dome is sheathed in aluminium. Inside there are three galleries at different levels. The highest is 35 feet supported on concrete pins, the other two are 12 feet and 22 feet, respectively, supported on the steel framework. There is an escalator up to the 35 foot level.

Beyond the Dome, hovering on the river's edge, is the vertical feature (14). This is a slender, elongated ellipse of aluminium, some 300 feet high, which will appear to hang suspended in space. It is constructed of a lattice steel framework, ringed round at close intervals with pressed aluminium louvre reflectors. It will be illuminated internally, and aluminium cones will spill the light outward onto the external reflectors. The lower tip of this "skylon" as it is called will rest on a cradle of steel cables 40 feet above the ground.

Between the Skylon and the Dome will be placed one of the four large works of sculpture specially commissioned for the Festival. This one is by Barbara Hepworth. It will stand about 10 feet high on a 7 foot pedestal.

DOME OF DISCOVERY (11)

View of part of interior of Dome when under construction; the picture shows roof structure just prior to covering with aluminium sheeting



BRITISH OFF. PHOTO

CHICHELEY STREET ENTRANCE CANOPY (1)

The perimeter screen is in the background



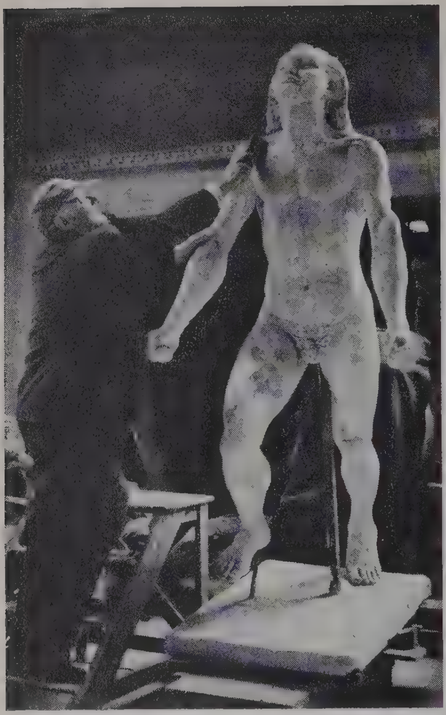
R. H. DE BURGH-GALWEY

WATERLOO STATION ENTRANCE (31)

The Dome is on the left with Transport Pavilion on the right



BRITISH OFF. PHOTO


BRITISH OFF. PHOTO

EPSTEIN IN HIS STUDIO

with the plaster-cast
of his new sculpture commissioned by and for
the Festival of Britain 1951

Turning now to the downstream sequence, which deals with the people of Britain under various headings, we find its starting point off the main concourse, opposite to that of the upstream sequence. The entrance, again, is through a cone-shaped aluminium canopy. Its first section carries it under the Hungerford railway bridge.

The first pavilion is the Origins of the People (18). This will show the various invasions and assimilations which have produced the British nation of today. The building itself is of light steel frame, left exposed, with brick panel walls standing free of the steel work. The exhibits are seen from platforms and ramps at different levels.

This is followed by the Character and Tradition Pavilion (18) which will attempt to show some of the characteristic ideas which make up the British attitude to life. It will deal with such things as the idea of Parliamentary Government, religions and civil liberties, craftsmanship, etc. The pavilion is a simple rectangular structure with a gallery along one of the long sides and stairs at each end. Three-quarters of the long wall looking on to the exhibition courtyard is glazed from the ground to the eaves level. The roof is curved in sections, and the walls are finished with cement rendering sprayed onto expanded metal lathing.

Attached to this building is a small open air restaurant (19) with a canvas roof supported by decorative poles.

The Homes and Gardens Pavilion (24) will display ways of using living space with greatest economy. Problems such as the multi-purpose room, home entertaining, the place of radio and television, the making of gardens and the use of the backyard will be considered. The pavilion provides a background to a large work of sculpture by Jacob Epstein.

The Introductory Pavilion and Telecinema (20/21) are next. The Introductory Pavilion is a small rectangular, reinforced concrete building on two floors. One-third of the ground floor is left open to serve as a passageway under Hungerford bridge, from one-half of the exhibition to the other. It will deal with cinematography and television, and will introduce the Telecinema itself, where both films and television will be shown. The Telecinema makes use of the existing basements of demolished properties, and the ground floor auditorium level is below ground level. Above this is a light steel superstructure spanned by standard size steel roof trusses. The Balcony and projection equipment sections are constructed as a box girder frame. The walls of the main hall are covered with a 9-inch quilt of soundproof material hung from the steel framework, to ensure against noises from the adjacent railway bridge. It will seat about 400 people.

In the courtyard adjoining the Telecinema are the Creche and Family Pavilion (25). The Creche is designed to take 250 children between the ages of five and seven. It includes reception, playrooms, a well-equipped open-air play space for infants and juniors, together with a milk bar, medical section, miniature cinema, and administration block. The structure is of light tubular steel, clad in asbestos, wallboard and canvas. The Family Pavilion is a rectangular building of light steel frame, with walls and roof of stretched canvas panels.

The Waterloo Bridge Entrance to the Exhibition (31) is one of the five main entrances. It consists of turnstiles, entrances and exits from Waterloo Bridge, Road, and is constructed of reinforced concrete with light metal and plastic superstructure. The tower adjacent to the entrance is of open tubular framework with decorative features and will house a glass-sided elevator serving a viewing platform 80 feet above the ground. Under this building will be a series of spaces devoted to a display on "Schools."

Under Waterloo Bridge, following the curved wall of the river embankment, will be the Thameside Cafeteria (34). It will be of light prefabricated construction, with canvas and plaster cladding. Above the embankment wall it will have a fully glazed façade.

The Harbour Buffet (32) is placed to overlook two decorative pools (one of which is constructed within an existing barge dock on the site) which will contain river craft, model boats, etc. It will be a light prefabricated structure openly planned and mainly canvas clad.

The Sports Pavilion (35) will be devoted mainly to sports which originated in Britain and have subsequently been adopted across the world. One section will demonstrate craftsmen making the sporting equipment, another will be used for sporting demonstrations. This building is also of light prefabricated construction with canvas cladding.

Already existing on the site is a Shot Tower (30), formerly used by industry in the preparation of lead shot. It is being preserved as part of the Exhibition and will carry a lighthouse beacon, and radar equipment for directing impulses at the moon, and picking up their reflections. It will carry a decorative balcony around its base, commemorating the 1851 Exhibition. Between the Shot Tower and

the Sports Pavilion will be a Grass Arena for displays of physical culture and various sports.

The Seaside Exhibit (28) will show how the British Coastline has been developed in two distinctive directions – the Port, and the Resort. Exhibits will range from lifeboats and yachting, to bathing dresses and pier amusements. It will be an open-air display situated along the embankment terrace between the Concert Hall and the river. The main display is arranged below a canvas velarium carried on six tubular steel masts 65 feet high, which will also support small covered "look-out" platforms cantilever out over the river. A bridge containing a bar will overlook the approaches to one of the two main river landing stages.

The permanent Concert Hall (27) is the dominating structure in the downstream sequence. There are three principal elements in the design – a main concert hall, a small concert hall, and a main foyer, with the foyer at an intermediate level between the main hall above, and the small hall below.

The main hall seats about 2900 with additional seating for 250 in the choir, and standing room for another 300. The platform provides for an orchestra of 100, choir of 250 and a full concert organ. Backstage there are practice rooms, dressing rooms, refreshment facilities, and a full scale reproduction of the concert platform, for rehearsals. The auditorium itself is acoustically one of the most advanced designs in the world, capable of being tuned and adjusted to the requirements of the performance.

The promenades surrounding the Concert Hall are readily accessible from the auditorium and give magnificent views up and down the river.

The small hall seats 750. It has separate access and is planned for chamber music, cinema projection, dramatic performances, recitals, etc. It has a stage platform with proscenium opening and a hanging loft for scenery.

The main foyer is planned as a promenade space. It may be used either for concert hall purposes or for other uses such as receptions, dances, etc. It is equipped with its own bar.

Adjoining the main foyer, and overlooking the river, is a restaurant on two levels, catering for 700 people. The space is highly flexible and may be used in several ways. Both foyer and restaurant have direct connection with the terrace and riverside gardens.

The whole of the top floor over the backstage accommodation is reserved for exhibition space.

Adjacent to this are two meeting rooms which can be used for lectures. One of these seats 200, the other 100. In addition, two further reception suites are provided.

Perhaps one ought not to make comparisons. And yet the temptation is very strong. Faced with an event such as the 1951 Festival, one's mind inevitably goes back to the 1851 Exhibition and tries to evaluate one against the other. If I may be permitted to indulge the temptation, then, it seems to me, that the great difference between the two events is that there is nothing on the South Bank that will represent for the future what the Crystal Palace of 1851 represented. The Crystal Palace presaged a new era in the architectural conception of space, and in technical development. The South Bank represents a refinement and re-assessment of the architectural thought of the past half-century. This does not mean that there is nothing new on the South Bank. On the contrary. The roof of the Fair-



R. H. DE BURGH-GALWEY

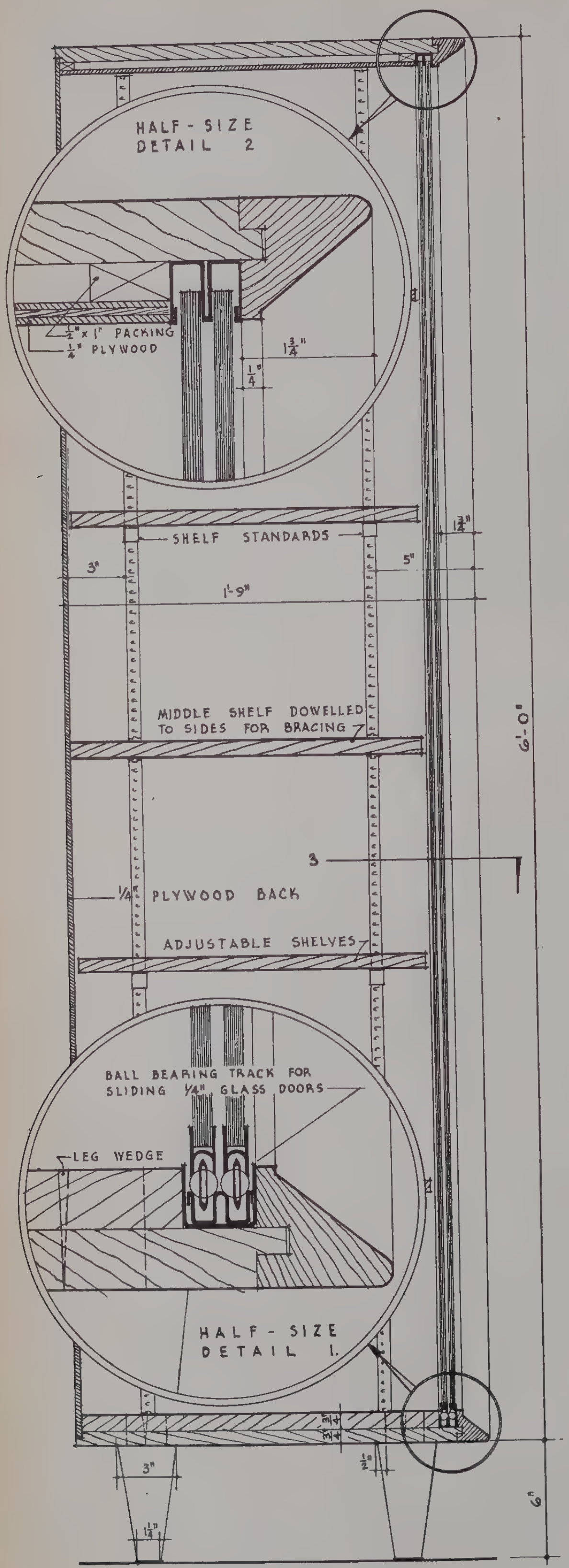
ROOF OVER FAIRWAY RESTAURANT

Showing diagrid constructed of 3" x 15" pre-cast post-stressed concrete beams, giving clear span of 60 feet

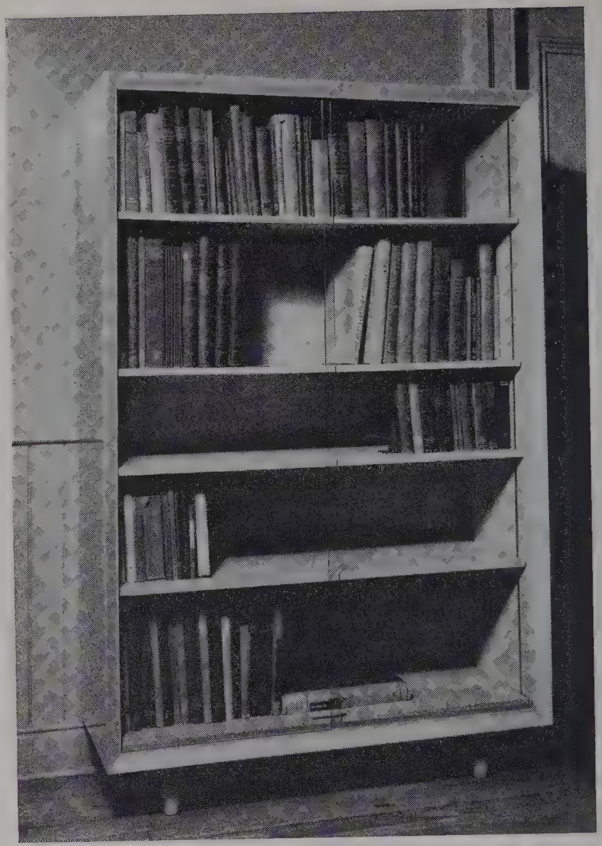
way Restaurant ((3) on the key map) for example, is constructed of a diagrid of pre-cast, post-stressed concrete beams, only 3 inches by 15 inches in section but spanning clear an area 60 feet by 50 feet. The beams, carrying concealed continuous lighting on top, form the interior ceiling treatment. It is an exciting piece of design, and, as far as I know, quite unique. Again, the dynamic concept of the "skylon," compared with the static qualities of the trylon and perisphere which symbolized the New York World's Fair, represents an advance, both structurally and aesthetically.

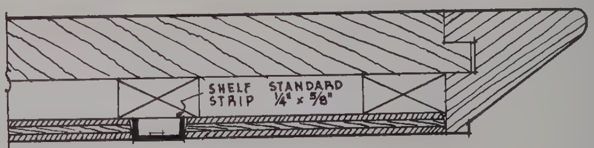
But is not so much the innovations as such, which impresses the visitor. It is rather the very high general standard of design; the refinement of detail, and the sensitivity to structure, colour, texture, and the play of space. The Dome of Discovery, the Chicheley Street entrance canopy and administration block are only some of the designs which indicate how far British architecture has re-examined the clichés and the established dicta of our times. And even in terms of presaging the future, as the Crystal Palace did in 1851, the Festival of Britain 1951 has a contribution to make. But this will not be found on the South Bank. One must go to the "Live Architecture" exhibition at Poplar, to find it. For just as the Crystal Palace symbolized the coming era of technical and spatial discovery, so the Lansbury development symbolizes the coming era of social reconstruction. But that is another story.

SELECTED DETAIL

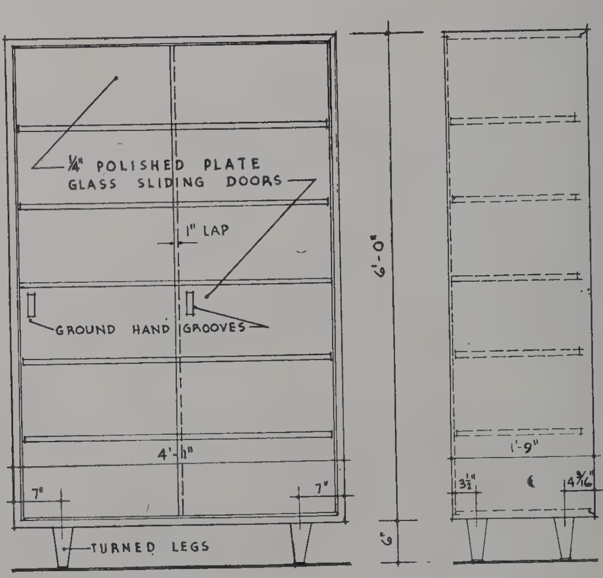


SECTION
SCALE 1½" = 1'-0"





HALF-SIZE DETAIL 3



ELEVATIONS
SCALE ½" = 1'-0"

BOOKCASE

SCHOOL OF ARCHITECTURE

UNIVERSITY OF TORONTO

WM. J. McBAIN
ARCHITECT

NEWS FROM THE INSTITUTE

ALBERTA

From Mr A. L. Gale's article in the February issue of the JOURNAL on Architectural Criticism we learn that if we charge someone with libel we must show that the statement complained of was untrue in fact. I dimly recollect that the painter Whistler took an action against Ruskin who had, it seems, stated that Whistler had thrown a pot of paint at the heads of the public. Maybe the paint-pot expression was not the real crux of the case for Ruskin would have had some difficulty in proving that Whistler did in fact misuse the paint-pot and the public in the manner alleged. The action went against Ruskin who was amerced one farthing as damages.

Ruskin was one of the greatest critics of architecture and painting, often wrong in the lower courts yet right in the higher courts of judgement. His "aphorisms" read so quaintly today that many must raise a smile and one may be inclined even to scoff at some of them. Yet it would be folly to do so. It would be wiser to think them over a bit. For here was a man consumed with zeal for the beautiful who "loathed the wrong and aye upheld the right," a man of keenest sensibility and of great accuracy and extent of observation who under the fire of bitter criticism magnificently maintained his own criteria. It should be remembered that in his later life he wished to withdraw all his works on architecture because they embodied early prejudices which he regretted. But these works had been eagerly purchased in thousands and withdrawal was impracticable. Some of these prejudices are easily discernible and easily discounted. Some of them arose from an early rigid religious training which induced the idea that the division of mankind into sheep and goats was part of the necessary duties of individual judgement; works of art were the evidence on which men were to be judged.

A more serious characteristic of Ruskin's was that his mind was captive to the past. Architecture was completed in the past. The best had been. Further evolution was not a possibility. The laws of criticism were inevitable like physical laws. He admits, however, that human nature may have to bend to necessity. In one case, where he has to excuse a common practice which he cannot wholly approve, he says, "Outcry has been made against it but the thing is so strongly necessary that it has always forced itself into acceptance." So many things have forced themselves into acceptance since Ruskin's time that it would require a considerable number of additional aphorisms to include them. His judgements are based almost entirely upon stone or brick construction. Concrete, steel and reinforced concrete have received general acceptance to such an extent that a present day architect must feel that he is living and working in a different world from Ruskin's.

His early confidence in the adequacy of his own knowledge to divide the right from the wrong appears in such passages as this: after discussing the principal features of architecture, walls, piers, arches, roofs, buttresses, openings and ornament, Ruskin assures us, "the reader has now some knowledge of the principal features of all possible architecture . . . and feels himself prepared, by understanding their plain function, to form something like a reasonable and definite judgement whether they be good or bad; and this right judgement of parts will, in most cases, lead him to just reverence or condemnation of the whole." His aim is ever justice with consequent reverence or condemnation and this justice is readily ascertainable by ordinary methods of reasoning.

Here is a typical example of his critical method: He decides that all considerable openings in walls should be spanned by arches, as being the strongest means, and since doors are necessary but must be of awkward shape if continued into the arch, a horizontal lintel must be placed across at the springing of the arch. The tympanum above this may be either solid or glazed. He then concludes, "This is the form of all good doors, without exception, over the whole world and in all ages and no other can ever be invented." One is apt to smile at this characteristically sweeping statement. But if one were to search the world for the most beautiful doorways the best would answer this description and this is surely a fact worthy of an architect's notice.

Two short quotations give us the foundations on which Ruskin's thinking is based:

"Perhaps all that we have to do is meant for nothing more than an exercise of the heart and the will and is useless in itself."

"There is no wealth but life."

C. E. Burgess

CONTRIBUTORS TO THIS ISSUE

HENRY GORDON HUGHES, B. Arch., A.R.I.B.A., M.R.A.I.C., was born in Quebec City in 1902. He was educated in Canada and in England and at Royal Military College and McGill University. He has worked in Montreal and in New York and now has a private practice in Ottawa. He is also architect to the Royal Canadian Mint and the National Research Council Laboratories. In 1946 he joined the Department of National Health and Welfare as Chief, Hospital Design Division.

H. H. MADILL, the author of the article *The Architect and the Hospital Board,* is Director of the School of Architecture, University of Toronto. He was made a Fellow of the R.A.I.C. in 1935 and was honoured by the American Institute of Architects with a Corresponding Membership in that Institute at their convention in 1948. Professor Madill has represented the University of Toronto on the Registra-

tion Board of the O.A.A. since 1936 and has been Chairman of the Board since 1944. He is also a member of the firm of Craig & Madill, Architects, in Toronto.

E. A. Levin, born in Winnipeg, 1919. University Arts and Science studies interrupted by war. Captain in the Queen's Own Cameron Highlanders in N.W. Europe. Married in England during the war. Returned to take B. Arch. at University of Manitoba. At present in England working for Architects Co-operative Partnership on Festival buildings, and studying Planning at School of Planning and Research for Regional Development.

OBITUARY

Freestone, A. J., (63) chief architect for the Toronto Board of Education, died suddenly on March 12.

Born and educated in Toronto, he was responsible for the plans of Northern Vocational, Western Technical, Harbord Collegiate, Danforth Technical, Jarvis Collegiate, Lawrence Park Collegiate, and many other schools. With the assistance of the former chief architect, C. E. C. Dyson, who retired last year, Mr Freestone had worked on plans for the proposed school for crippled children. He was employed by the Board of Education for 35 years.

Gardiner, William Frederick (F), was born in Bath, England, in May 1884. After serving an apprenticeship with his father, he came to Vancouver in 1905 where he commenced the practise of his profession.

His passing leaves a manifold loss. Vancouver mourns a pioneer, one whose interests and activities for the welfare of his fellow men dated from his arrival in Canada and embraced such fields as the Seamen's Institute, the Navy League, housing and planning groups and the Chinese Mission. Any worthwhile civic or national undertaking found him an enthusiastic supporter.

He served overseas in the war 1914-18 with the 2nd C.M.R.s, was mentioned in despatches and was severely wounded.

The architectural profession has lost a keen and tireless worker for the improvement of the profession. A charter member of the Architectural Institute of British Columbia, a past president, and, until now, the Honorary Secretary, he always found time to edit his news column in the Journal of Commerce, to give information and advice to architects from other places and countries, or to give assistance to draftsmen.

His practise, though general, was largely in bank work. The original Bank of Commerce on Main Street built in 1914, the new head office building for the same bank now in preparation, and the new Bank of Toronto are examples.

Without doubt, the high status of the architect in B.C., owes much to Mr Gardiner's steady efforts and it is a great pity he will not be present to welcome the next R.A.I.C. Assembly when it convenes here in 1952.

Gordon, Henry Bauld, (96) retired architect and a past president of the Association, died on March 4.

Mr Gordon was born in Toronto. In partnership with Grant Helliwell, he was the architect for many Toronto churches and other buildings.

Always keenly interested in church work, Mr Gordon spent three years in Korea and North China under the auspices of the Presbyterian Mission Board of Canada, and while in the Orient, built a number of mission churches. He was a gifted Bible student and teacher and contributed material used by the International Sunday School Lessons. He was also noted for his translations of the Scriptures.

For 27 years he served on the trustee board of Knox Presbyterian church and for 19 years was treasurer of the church's trust fund.

Martin, Harry, (74) who designed many buildings in East York Township, passed away March 6, after an illness extending for several years.

Mr Martin served on the East York Board of Education, and designed the East York Fire Hall, the Second Church of Christ Scientist on Danforth Avenue, the Floyd Avenue Tabernacle, the Hartman Jones Memorial School, the R. H. McGregor Public School, and many houses. He was co-designer in the building of the East York Collegiate.

Stewart, Hugh C., who died on January first of this year, was unfortunately not known to a great many of our members, as being an Architect on the staff of The Bank of Nova Scotia he did not take an active interest in the affairs of the Association, and in consequence attended only a few of our meetings.

Mr Stewart was a native of Glasgow, Scotland, having been articled in that City, graduating from the Glasgow School of Art, and before coming to Canada acted as a draughtsman for Redpath, Brown & Company, Structural Steel Engineers in that City. He joined the staff of The Bank of Nova Scotia seven years after his arrival in Canada in 1905.

Thomson, James, (80) died March 4 in Toronto. Born in Innisfil Township, he worked as an architect in Barrie and Sault Ste Marie before coming to Toronto. He was responsible for the design of many homes in the Avenue Road district, as well as churches, schools and industrial buildings throughout the city. One of his last jobs was remodelling the Barrie Town Hall.

Facts by Pilkington about Glass
FOR ARCHITECTURAL STUDENTS

VOLUME No. 2
PREFACE

Before we start

VOLUME 2

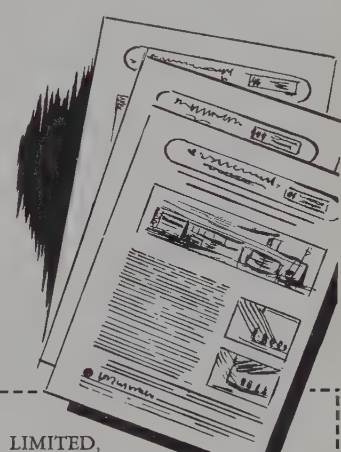
Next month Volume 2 of "Facts About Glass" will commence in this Journal. This Volume will deal largely with methods of installations. It will also contain information regarding new products in the field of glass manufacture and their applications.

Its main purpose will be to offer the architectural student a source of knowledge of terms and data to assist him in his future contact with the contractor.

As Volume 1 dealt largely with the characteristics of glass, illustrated with examples of installations, Volume 2 is a natural sequel. It will therefore be valuable and of great assistance for readers to have Volume 1 complete. Reference will be made to it from time to time. Go over your collection today and see if you have all the pages issued to date.

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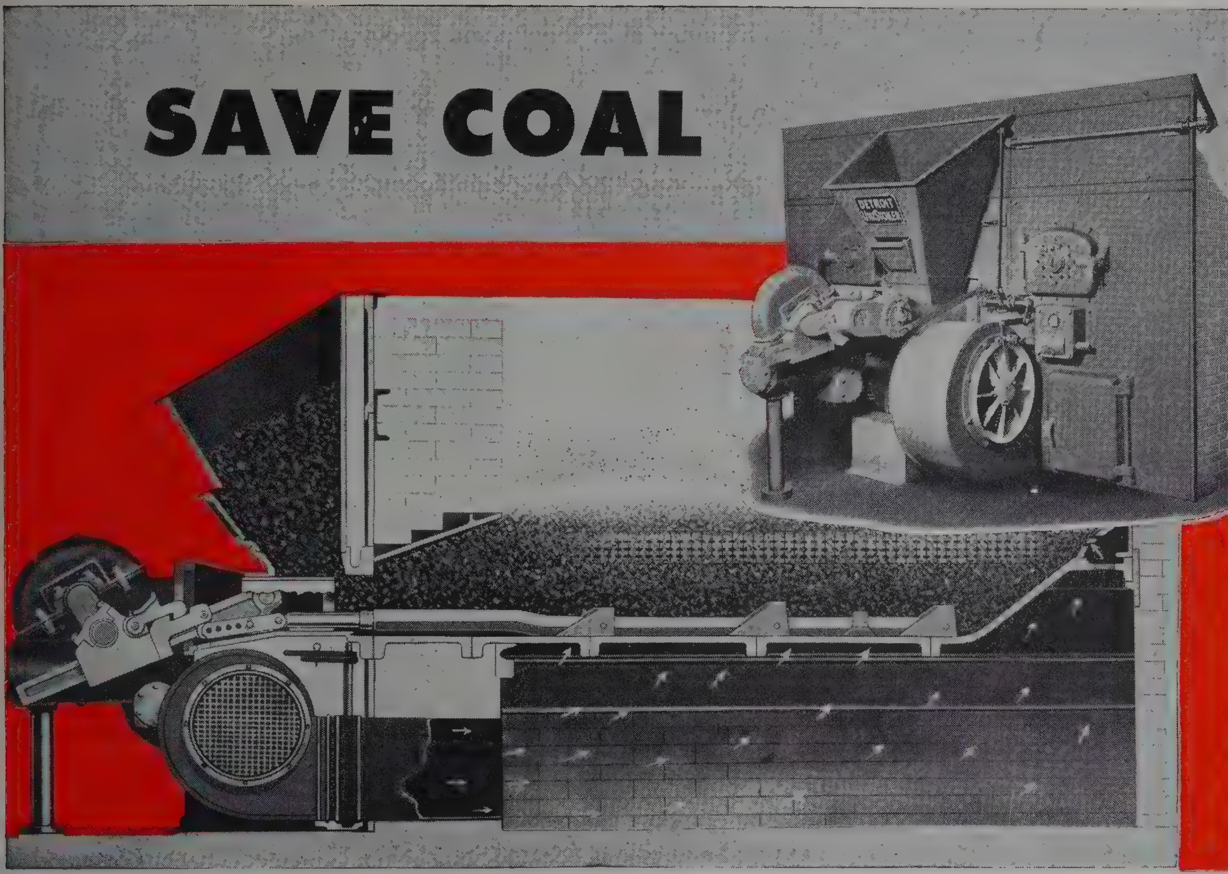
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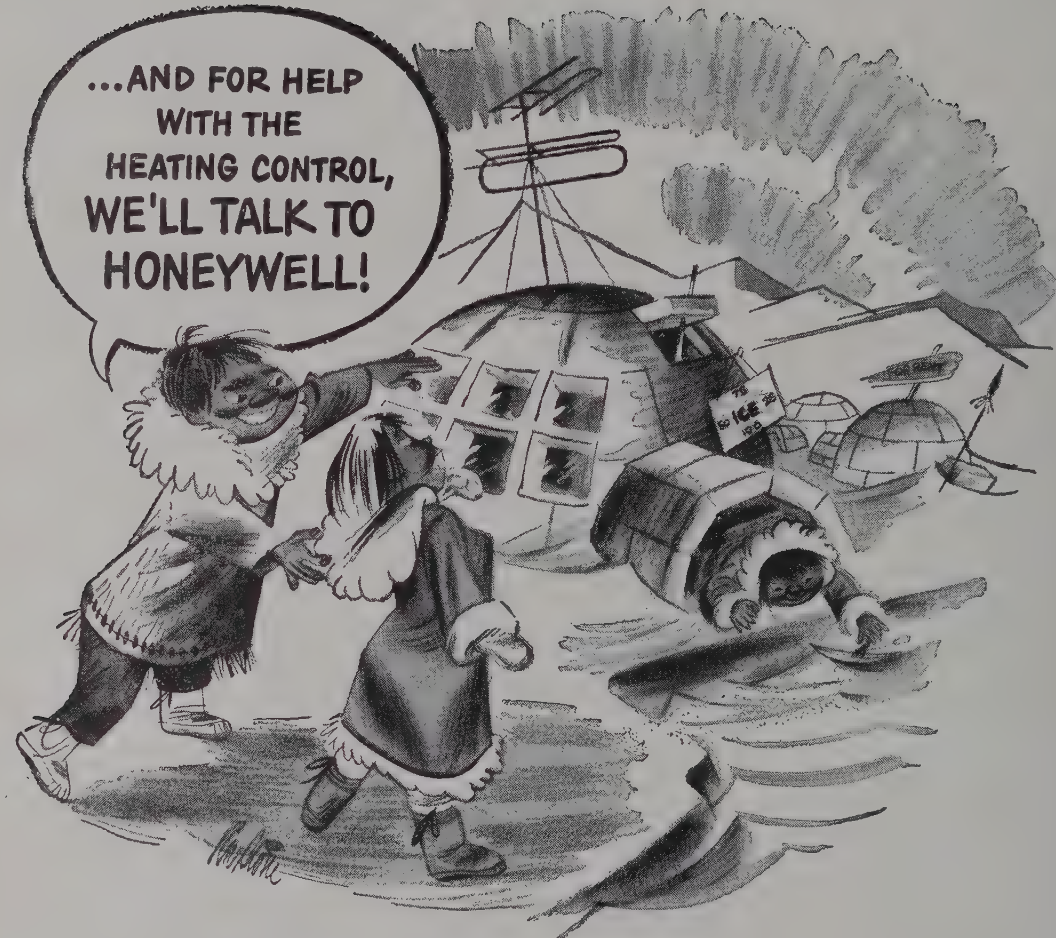
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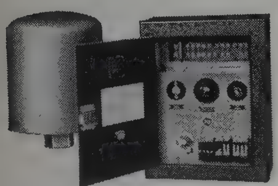
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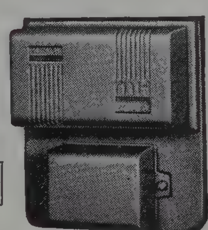
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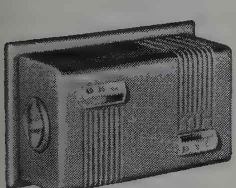
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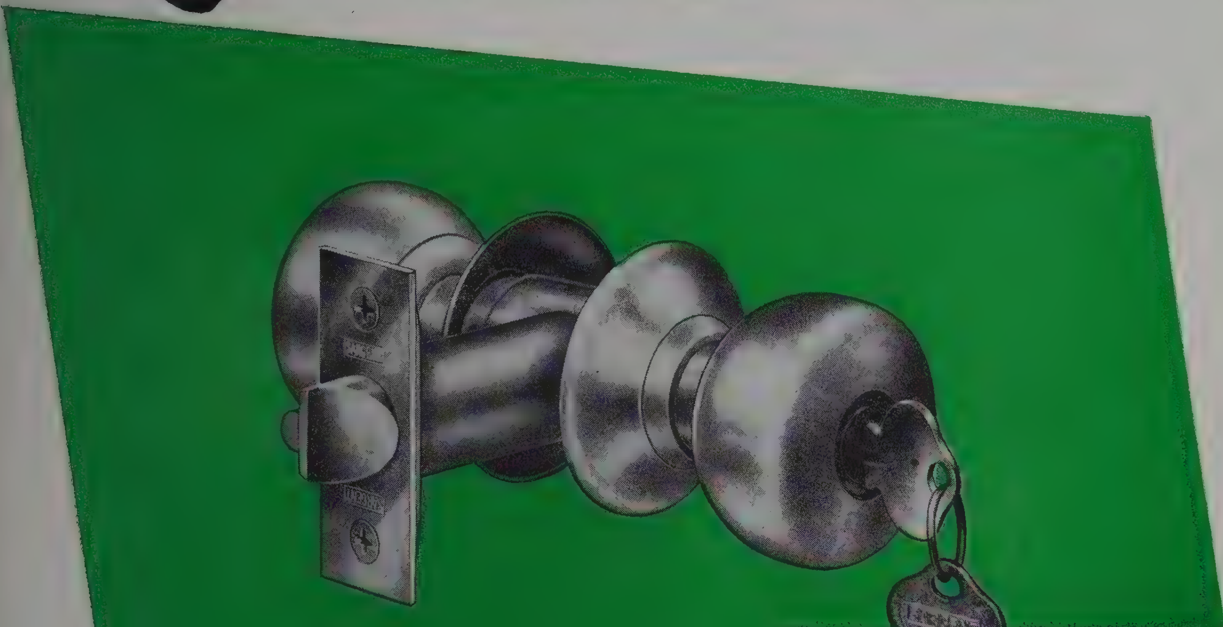
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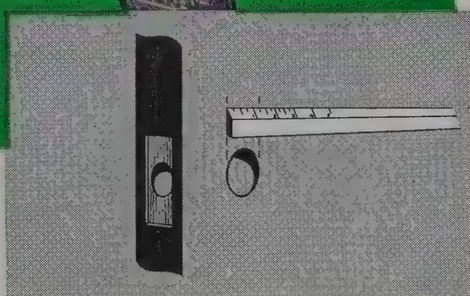
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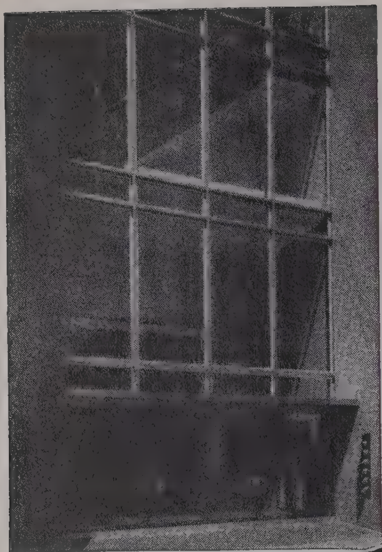
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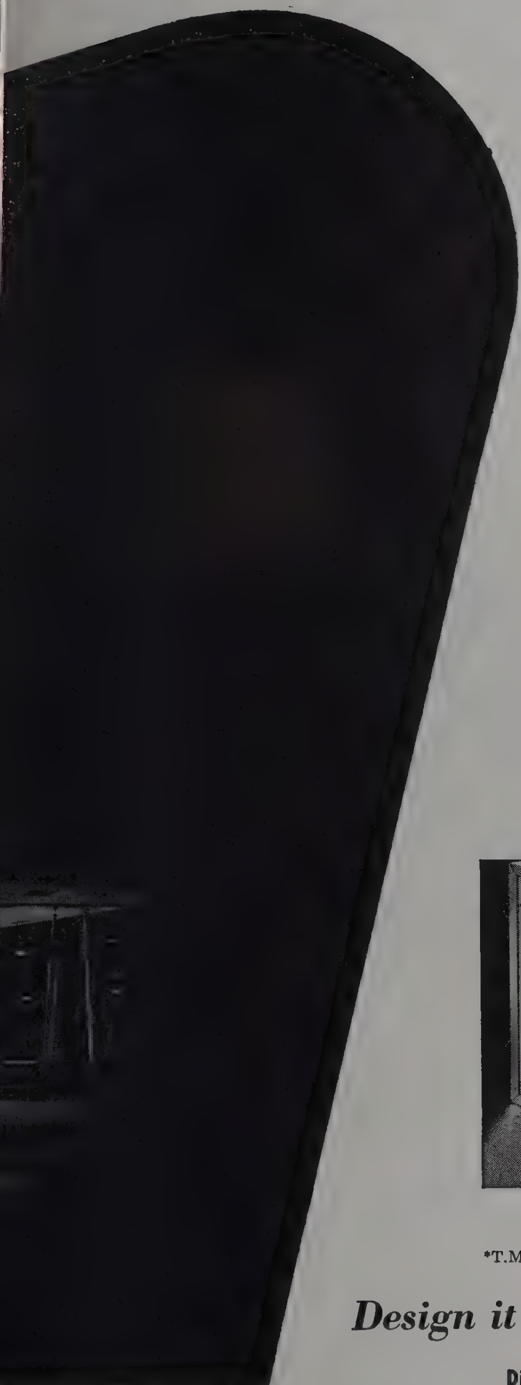
Interesting applications

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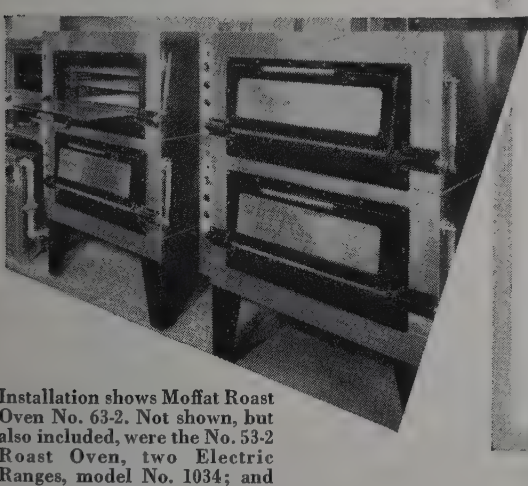


Architects : Govan, Ferguson, Lindsay, Kaminker, Maw, Langley, Keenleyside

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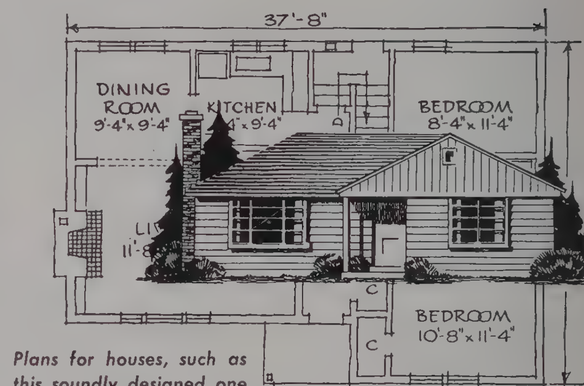
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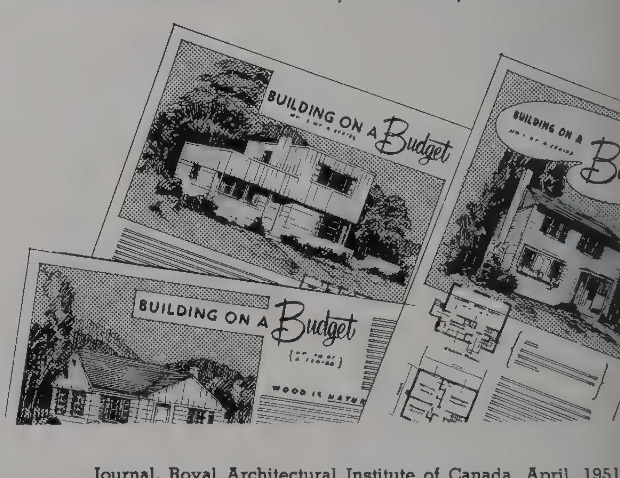
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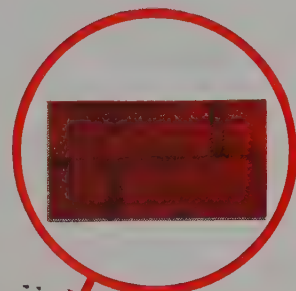

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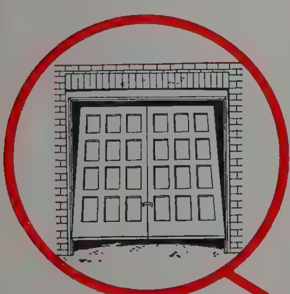
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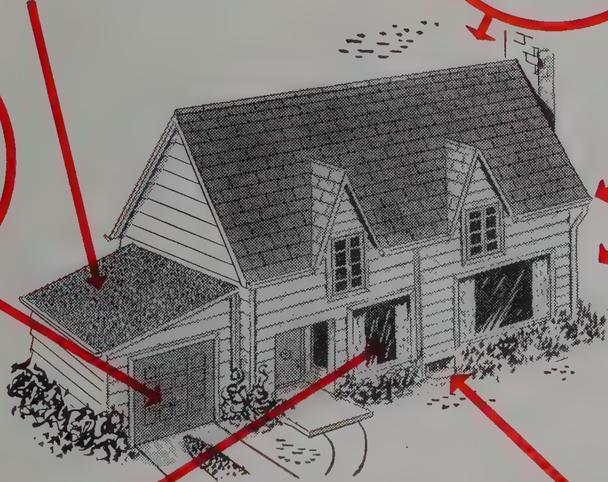
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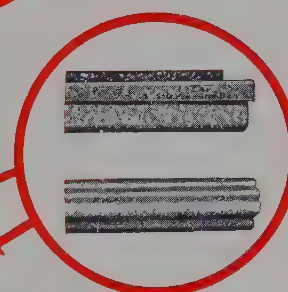


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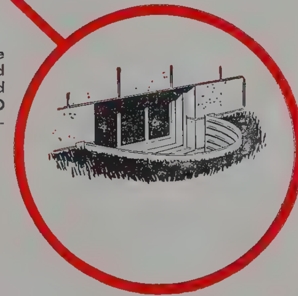






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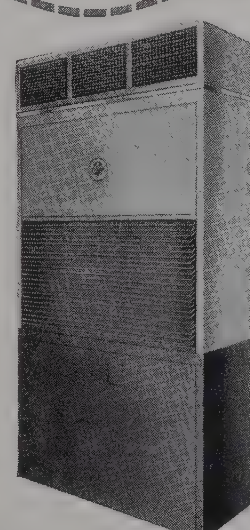
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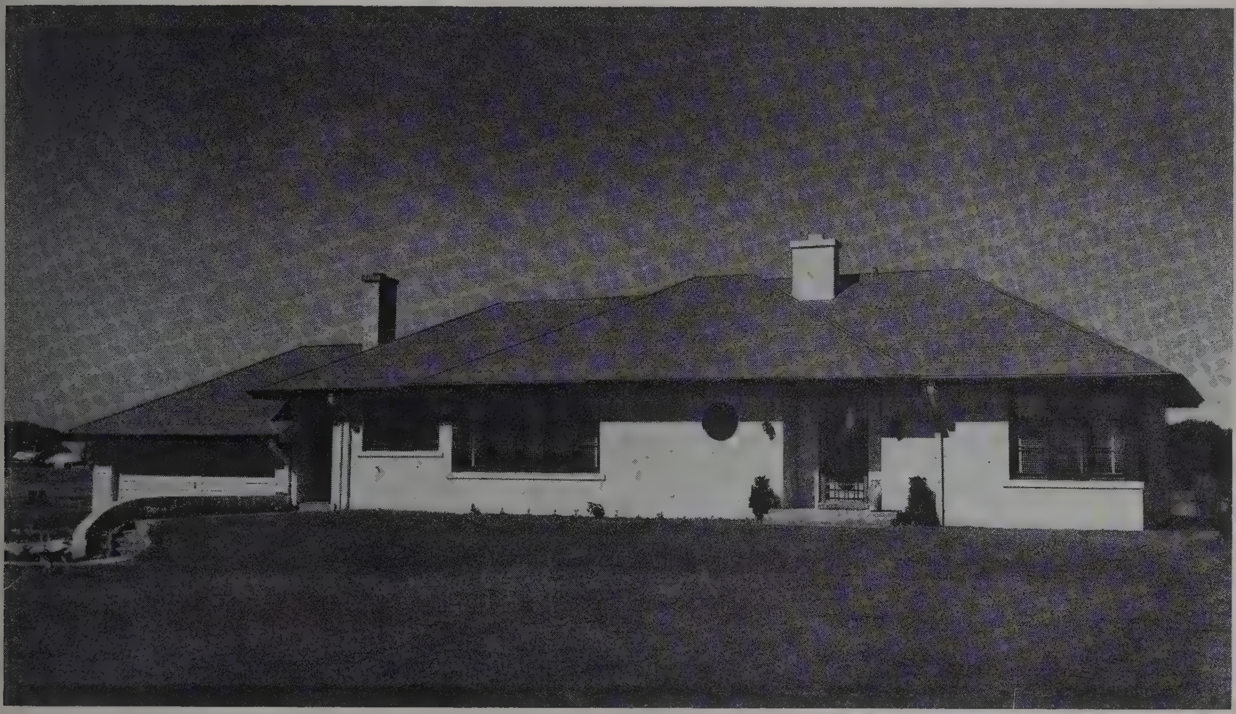
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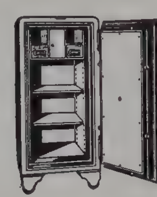
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Size (Inches)	½-2" Screwed	2½-3" Screwed	1½-3" Flanged
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Non-shock Cold Oil, Water or Gas	225	175	175
Total temperature	450°F.	450°F.	450°F.

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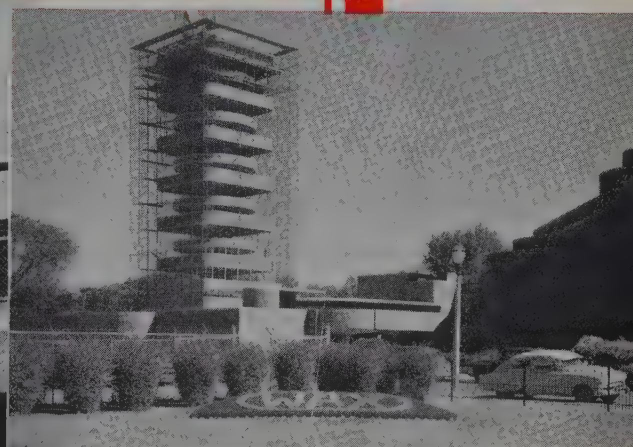
POZZOLITH CONCRETE

IN

Great Research Laboratory of S. C. Johnson & Son, Inc.



Research and Development Tower, S. C. Johnson & Son, Inc., (makers of Johnson's Wax) Racine, Wisconsin. Archt.—Frank Lloyd Wright, Spring Green, Wisc.; Contr.—Wiltscheck & Nelson, Racine, Wisc.; Pozzolith Ready-Mixed Concrete furnished by Consumers Co., Racine, Wisc.



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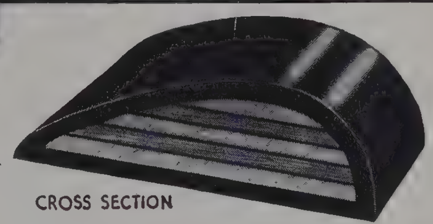
where severe *use* and *abuse* and lasting sanitary qualities are essential requirements. It has been established that they

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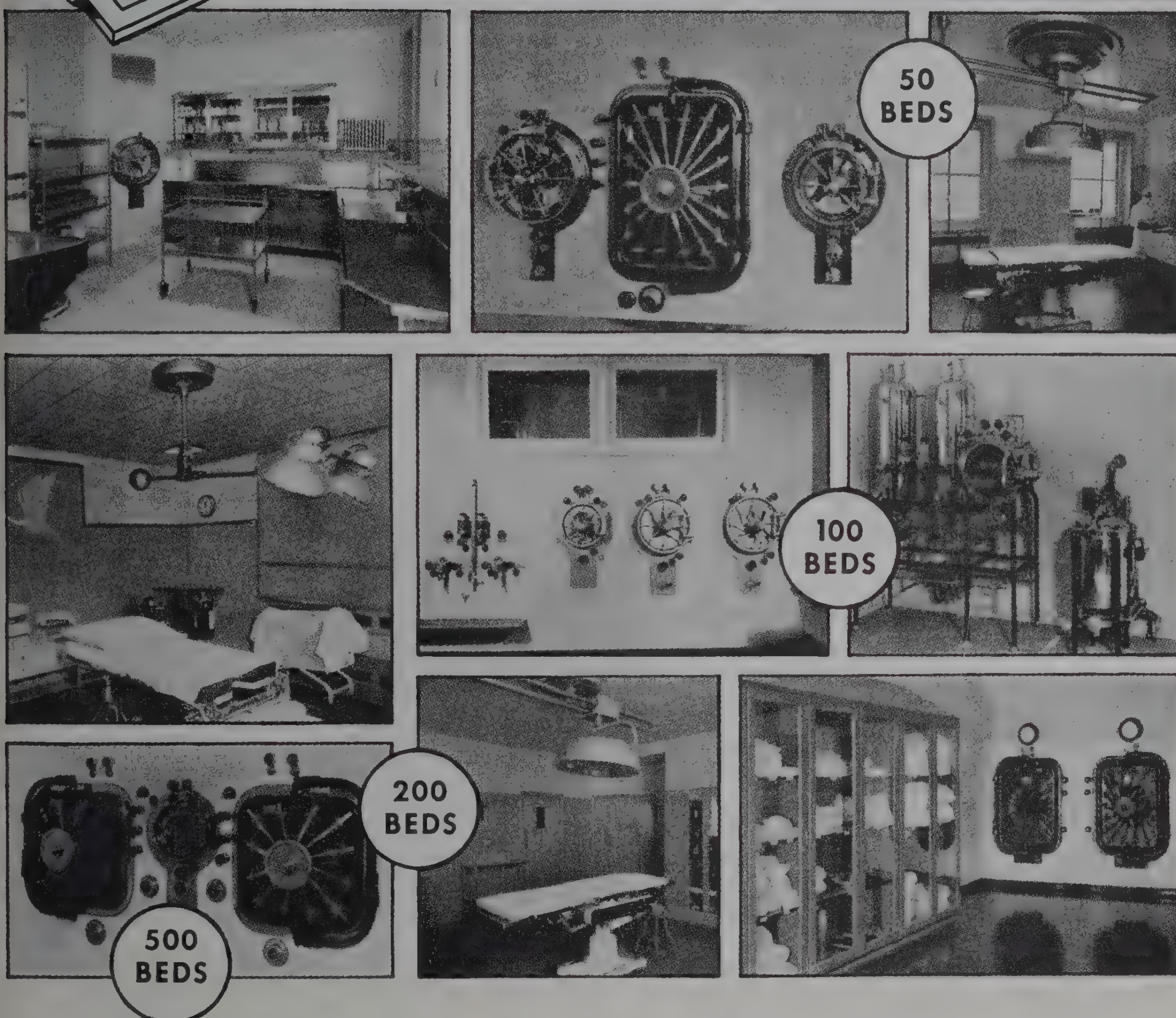
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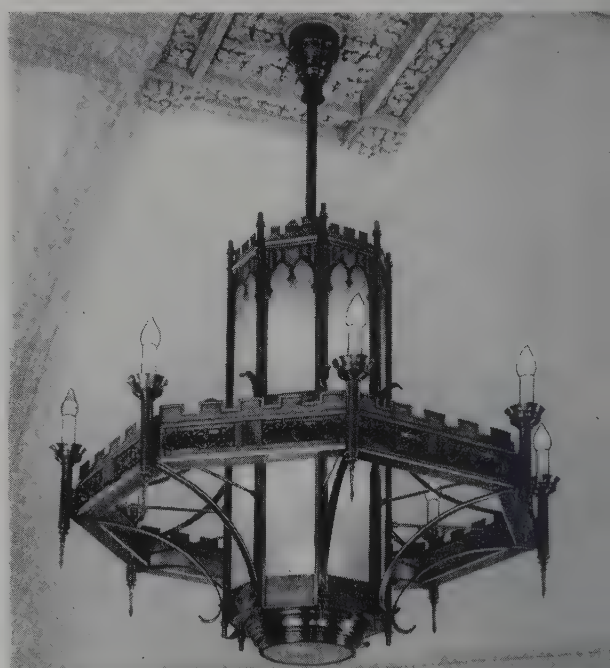


Some recent examples are illustrated:

- A Bank of Montreal Toronto, Ont.
- B Bank of Canada Montreal, Que.
- C All-aluminum Bridge, Arvida, Que.
- D Pine River Bridge, Pine River, B.C.
- E Avalon Telephone Building, St. John's, Newfoundland.
- F International Aviation Building, Montreal, Que.
- G National Research Laboratory, Saskatoon, Sask.
- H Hotel Laurentien, Montreal, Que.
- I Vocational School, Winnipeg, Man.

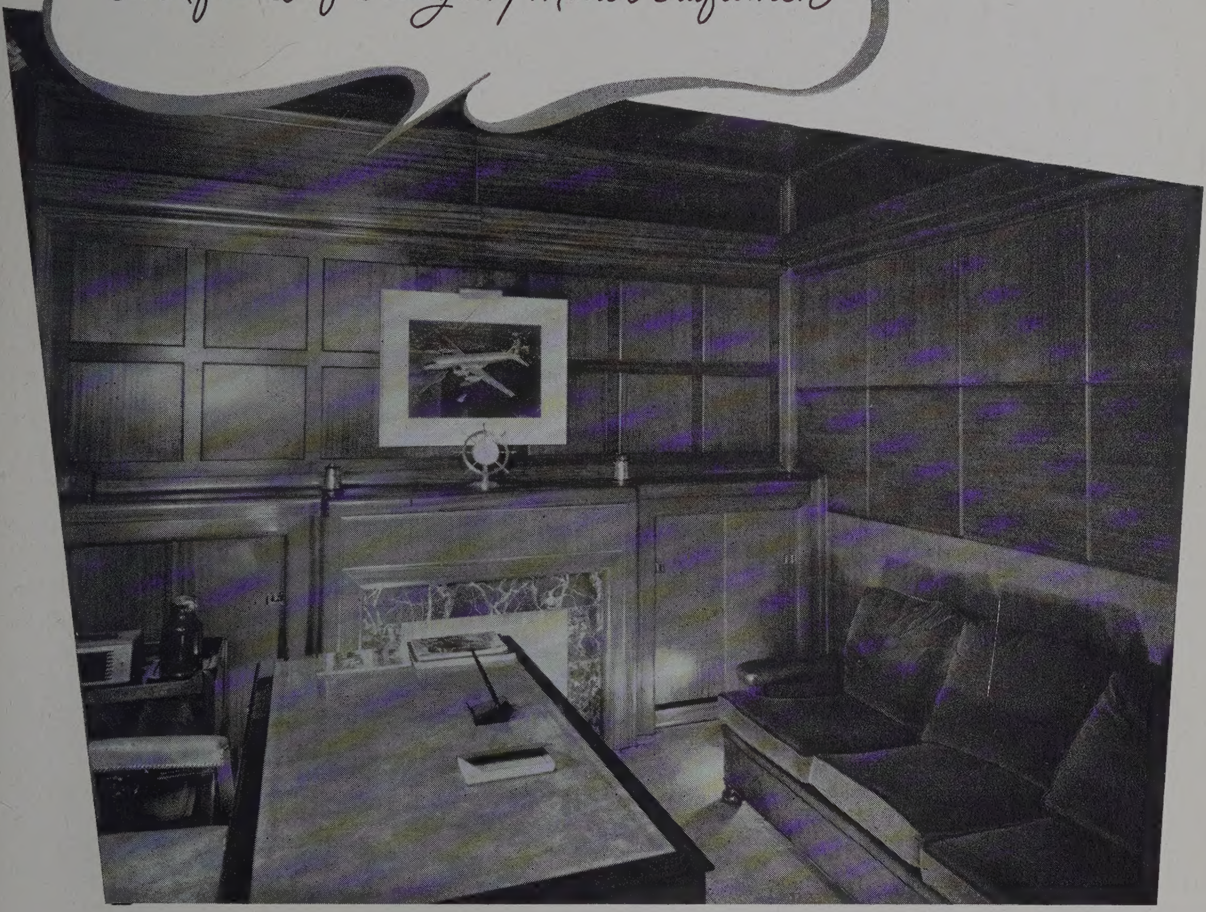
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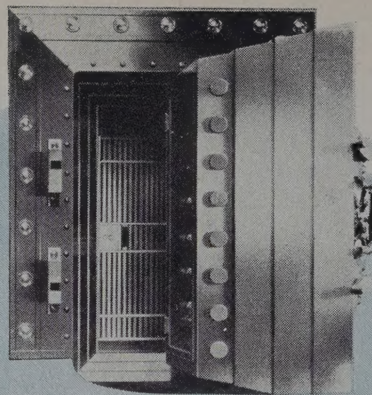
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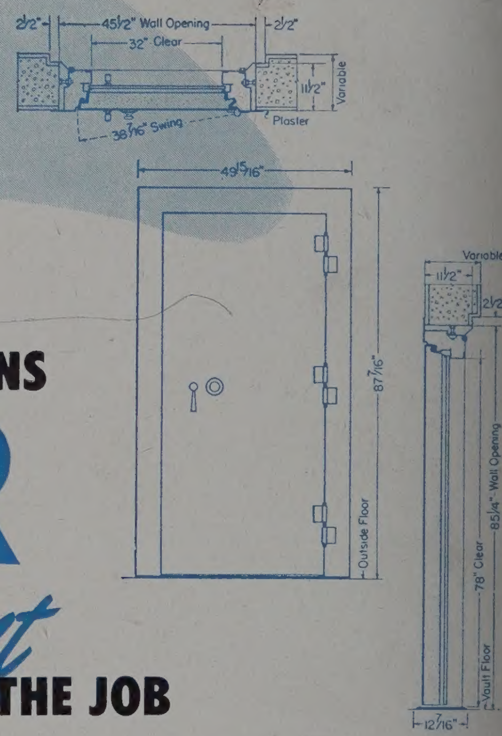
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